

Please type a plus sign (+) inside this box



08-14-00

Box SER

PTO/SB/05 (2/98)

A

**UTILITY
PATENT APPLICATION
TRANSMITTAL**

Attorney Docket No.

210121.462C4

First Inventor or Application Identifier

Jennifer L. Mitcham

Title

COMPOSITIONS AND METHODS FOR THE THERAPY
AND DIAGNOSIS OF OVARIAN CANCER

Express Mail Label No.

EL615231951US

Only for nonprovisional applications under 37 CFR § 1.53(b)

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO:Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 202311. ☐ General Authorization Form & Fee Transmittal
(Submit an original and a duplicate for fee processing)2. ☒ Specification [Total Pages] **80**
(preferred arrangement set forth below)

- Descriptive Title of the Invention
- Cross References to Related Applications
- Statement Regarding Fed sponsored R & D
- Reference to Microfiche Appendix
- Background of the Invention

- Brief Summary of the Invention
- Brief Description of the Drawings (if filed)
- Detailed Description
- Claim(s)
- Abstract of the Disclosure

3. ☒ Drawing(s) (35 USC 113) [Total Sheets] **97**

4. Oath or Declaration [Total Pages]

a. ☐ Newly executed (original or copy)b. ☐ Copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 17 completed)i. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting
inventor(s) named in the prior application,
see 37 CFR 1.63(d)(2) and 1.33(b)5. ☐ Incorporation By Reference (useable if box 4b is
checked) The entire disclosure of the prior application,
from which a copy of the oath or declaration is supplied
under Box 4b, is considered to be part of the disclosure of
the accompanying application and is hereby incorporated
by reference therein.6. ☐ Microfiche Computer Program (Appendix)7. Nucleotide and Amino Acid Sequence Submission
(if applicable, all necessary)a. ☒ Computer-Readable Copyb. ☒ Paper Copy (identical to computer copy)c. ☒ Statement verifying identity of above copies**ACCOMPANYING APPLICATION PARTS**8. ☐ Assignment Papers (cover sheet & document(s))9. ☐ 37 CFR 3.73(b) Statement (when there is an assignee) ☐ Power of Attorney10. ☐ English Translation Document (if applicable)11. ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations12. ☐ Preliminary Amendment13. ☒ Return Receipt Postcard14. ☐ Small Entity Statement(s) ☐ Statement filed in prior application,
Status still proper and desired15. ☐ Certified Copy of Priority Document(s)
(if foreign priority is claimed)16. ☒ Other: Certificate of Express Mail

17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information below and in a preliminary amendment

☐ Continuation ☐ Divisional ☒ Continuation-In-Part (CIP) of prior Application No.: 09/617,747Prior application information: Examiner not assigned Group / Art Unit not assigned☐ Claims the benefit of Provisional Application No. _____**CORRESPONDENCE ADDRESS**Jane E. R. Potter
Seed Intellectual Property Law Group PLLC
701 Fifth Avenue, Suite 6300
Seattle, Washington 98104-7092
Phone: (206) 622-4900 Fax: (206) 682-6031

Respectfully submitted,

TYPED or PRINTED NAME Gary M. MylesSIGNATURE Gary M. MylesREGISTRATION NO. 46,209Date August 9, 2000

u:\sharons\210121\462C4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

u:\sharons\210121\462

COMPOSITIONS AND METHODS FOR THE THERAPY AND DIAGNOSIS OF
OVARIAN CANCER

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of U.S. Application No.
5 09/617,747, filed 7/17/2000, which is a continuation-in-part of U.S. Application No.
09/404,879, filed September 24, 1999, which is a continuation-in-part of U.S. Application
No. 09/338,933, filed June 23, 1999, which is a continuation-in-part of U.S. Application
Nos. 09/216,003, filed December 17, 1999, and 09/215,681, filed December 17, 1998.

TECHNICAL FIELD

10 The present invention relates generally to ovarian cancer therapy. The
invention is more specifically related to polypeptides comprising at least a portion of an
ovarian carcinoma protein, and to polynucleotides encoding such polypeptides, as well as
antibodies and immune system cells that specifically recognize such polypeptides. Such
polypeptides, polynucleotides, antibodies and cells may be used in vaccines and
15 pharmaceutical compositions for treatment of ovarian cancer.

BACKGROUND OF THE INVENTION

Ovarian cancer is a significant health problem for women in the United
States and throughout the world. Although advances have been made in detection and
therapy of this cancer, no vaccine or other universally successful method for prevention or
20 treatment is currently available. Management of the disease currently relies on a
combination of early diagnosis and aggressive treatment, which may include one or more
of a variety of treatments such as surgery, radiotherapy, chemotherapy and hormone
therapy. The course of treatment for a particular cancer is often selected based on a variety
of prognostic parameters, including an analysis of specific tumor markers. However, the
25 use of established markers often leads to a result that is difficult to interpret, and high
mortality continues to be observed in many cancer patients.

0953301.084000

Immunotherapies have the potential to substantially improve cancer treatment and survival. Such therapies may involve the generation or enhancement of an immune response to an ovarian carcinoma antigen. However, to date, relatively few ovarian carcinoma antigens are known and the generation of an immune response against such antigens has not been shown to be therapeutically beneficial.

Accordingly, there is a need in the art for improved methods for identifying ovarian tumor antigens and for using such antigens in the therapy of ovarian cancer. The present invention fulfills these needs and further provides other related advantages.

SUMMARY OF THE INVENTION

Briefly stated, this invention provides compositions and methods for the therapy of cancer, such as ovarian cancer. In one aspect, the present invention provides polypeptides comprising an immunogenic portion of an ovarian carcinoma protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with ovarian carcinoma protein-specific antisera is not substantially diminished. Within certain embodiments, the ovarian carcinoma protein comprises a sequence that is encoded by a polynucleotide sequence selected from the group consisting of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387, 391 and complements of such polynucleotides.

The present invention further provides polynucleotides that encode a polypeptide as described above or a portion thereof, expression vectors comprising such polynucleotides and host cells transformed or transfected with such expression vectors.

Within other aspects, the present invention provides pharmaceutical compositions and vaccines. Pharmaceutical compositions may comprise a physiologically acceptable carrier or excipient in combination with one or more of: (i) a polypeptide comprising an immunogenic portion of an ovarian carcinoma protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with ovarian carcinoma protein-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid

sequence encoded by a polynucleotide that comprises a sequence recited in any one of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387 or 391; (ii) a polynucleotide encoding such a polypeptide; (iii) an antibody that specifically binds to such a polypeptide; (iv) an antigen-presenting cell that expresses such a polypeptide and/or (v) a T cell that specifically reacts with such a polypeptide. Vaccines may comprise a non-specific immune response enhancer in combination with one or more of: (i) a polypeptide comprising an immunogenic portion of an ovarian carcinoma protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with ovarian carcinoma protein-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence encoded by a polynucleotide that comprises a sequence recited in any one of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387 or 391; (ii) a polynucleotide encoding such a polypeptide; (iii) an anti-idiotypic antibody that is specifically bound by an antibody that specifically binds to such a polypeptide; (iv) an antigen-presenting cell that expresses such a polypeptide and/or (v) a T cell that specifically reacts with such a polypeptide.

The present invention further provides, in other aspects, fusion proteins that comprise at least one polypeptide as described above, as well as polynucleotides encoding such fusion proteins.

Within related aspects, pharmaceutical compositions comprising a fusion protein or polynucleotide encoding a fusion protein in combination with a physiologically acceptable carrier are provided.

Vaccines are further provided, within other aspects, comprising a fusion protein or polynucleotide encoding a fusion protein in combination with a non-specific immune response enhancer.

Within further aspects, the present invention provides methods for inhibiting the development of a cancer in a patient, comprising administering to a patient a pharmaceutical composition or vaccine as recited above.

The present invention further provides, within other aspects, methods for stimulating and/or expanding T cells, comprising contacting T cells with (a) a polypeptide

comprising an immunogenic portion of an ovarian carcinoma protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with ovarian carcinoma protein-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid
 5 sequence encoded by a polynucleotide that comprises a sequence recited in any one of SEQ ID NOs:1-387 or 391; (b) a polynucleotide encoding such a polypeptide and/or (c) an antigen presenting cell that expresses such a polypeptide under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells. Such polypeptide, polynucleotide and/or antigen presenting cell(s) may be present within a pharmaceutical
 10 composition or vaccine, for use in stimulating and/or expanding T cells in a mammal.

Within other aspects, the present invention provides methods for inhibiting the development of ovarian cancer in a patient, comprising administering to a patient T cells prepared as described above.

Within further aspects, the present invention provides methods for inhibiting
 15 the development of ovarian cancer in a patient, comprising the steps of: (a) incubating $CD4^{+}$ and/or $CD8^{+}$ T cells isolated from a patient with one or more of: (i) a polypeptide comprising an immunogenic portion of an ovarian carcinoma protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with ovarian carcinoma protein-specific antisera is not
 20 substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence encoded by a polynucleotide that comprises a sequence recited in any one of SEQ ID NOs: 1-387 or 391; (ii) a polynucleotide encoding such a polypeptide; or (iii) an antigen-presenting cell that expresses such a polypeptide; such that T cells proliferate; and
 25 (b) administering to the patient an effective amount of the proliferated T cells, and thereby inhibiting the development of ovarian cancer in the patient. The proliferated cells may be cloned prior to administration to the patient.

The present invention also provides, within other aspects, methods for identifying secreted tumor antigens. Such methods comprise the steps of: (a) implanting tumor cells in an immunodeficient mammal; (b) obtaining serum from the immunodeficient

mammal after a time sufficient to permit secretion of tumor antigens into the serum; (c) immunizing an immunocompetent mammal with the serum; (d) obtaining antiserum from the immunocompetent mammal; and (e) screening a tumor expression library with the antiserum, and therefrom identifying a secreted tumor antigen. A preferred method for
 5 identifying a secreted ovarian carcinoma antigen comprises the steps of: (a) implanting ovarian carcinoma cells in a SCID mouse; (b) obtaining serum from the SCID mouse after a time sufficient to permit secretion of ovarian carcinoma antigens into the serum; (c) immunizing an immunocompetent mouse with the serum; (d) obtaining antiserum from the immunocompetent mouse; and (e) screening an ovarian carcinoma expression library with
 10 the antiserum, and therefrom identifying a secreted ovarian carcinoma antigen.

The present invention also discloses antibody epitopes recognized by the O8E polyclonal anti-sera which epitopes are presented herein as SEQ ID NOs: 394-415.

Further disclosed by the present invention are 10-mer and 9-mer peptides predicted to bind HLA-0201 which peptides are disclosed herein as SEQ ID NOs: 416-435
 15 and SEQ ID NOs: 436-455, respectively.

These and other aspects of the present invention will become apparent upon reference to the following detailed description and attached drawings. All references disclosed herein are hereby incorporated by reference in their entirety as if each was incorporated individually.

20 BRIEF DESCRIPTION OF THE DRAWINGS

Figures 1A-1S (SEQ ID NOs:1-71) depict partial sequences of polynucleotides encoding representative secreted ovarian carcinoma antigens.

Figures 2A-2C depict full insert sequences for three of the clones of Figure 1. Figure 2A shows the sequence designated O7E (11731; SEQ ID NO:72), Figure 2B
 25 shows the sequence designated O9E (11785; SEQ ID NO:73) and Figure 2C shows the sequence designated O8E (13695; SEQ ID NO:74).

Figure 3 presents results of microarray expression analysis of the ovarian carcinoma sequence designated O8E.

Figure 4 presents a partial sequence of a polynucleotide (designated 3g; SEQ ID NO:75) encoding an ovarian carcinoma sequence that is a splice fusion between the human T-cell leukemia virus type I oncoprotein TAX and osteonectin.

Figure 5 presents the ovarian carcinoma polynucleotide designated 3f (SEQ ID NO:76).

Figure 6 presents the ovarian carcinoma polynucleotide designated 6b (SEQ ID NO:77).

Figures 7A and 7B present the ovarian carcinoma polynucleotides designated 8e (SEQ ID NO:78) and 8h (SEQ ID NO:79).

Figure 8 presents the ovarian carcinoma polynucleotide designated 12c (SEQ ID NO:80).

Figure 9 presents the ovarian carcinoma polynucleotide designated 12h (SEQ ID NO:81).

Figure 10 depicts results of microarray expression analysis of the ovarian carcinoma sequence designated 3f.

Figure 11 depicts results of microarray expression analysis of the ovarian carcinoma sequence designated 6b.

Figure 12 depicts results of microarray expression analysis of the ovarian carcinoma sequence designated 8e.

Figure 13 depicts results of microarray expression analysis of the ovarian carcinoma sequence designated 12c.

Figure 14 depicts results of microarray expression analysis of the ovarian carcinoma sequence designated 12h.

Figures 15A-15EEE depict partial sequences of additional polynucleotides encoding representative secreted ovarian carcinoma antigens (SEQ ID NOs:82-310).

Figure 16 is a diagram illustrating the location of various partial O8E sequences within the full length sequence.

Figure 17 is a graph illustrating the results of epitope mapping studies on O8E protein.

Figure 18 is graph of a fluorescence activated cell sorting (FACS) analysis of O8E cell surface expression.

Figure 19 is graph of a FACS analysis of O8E cell surface expression.

Figure 20 shows FACS analysis results for O8E transfected HEK293 cells demonstrating cell surface expression of O8E.

Figure 21 shows FACS analysis results for SKBR3 breast tumor cells demonstrating cell surface expression of O8E.

DETAILED DESCRIPTION OF THE INVENTION

As noted above, the present invention is generally directed to compositions and methods for the therapy of cancer, such as ovarian cancer. The compositions described herein may include immunogenic polypeptides, polynucleotides encoding such polypeptides, binding agents such as antibodies that bind to a polypeptide, antigen presenting cells (APCs) and/or immune system cells (*e.g.*, T cells).

Polypeptides of the present invention generally comprise at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof. Certain ovarian carcinoma proteins have been identified using an immunoassay technique, and are referred to herein as ovarian carcinoma antigens. An "ovarian carcinoma antigen" is a protein that is expressed by ovarian tumor cells (preferably human cells) at a level that is at least two fold higher than the level in normal ovarian cells. Certain ovarian carcinoma antigens react detectably (within an immunoassay, such as an ELISA or Western blot) with antisera generated against serum from an immunodeficient animal implanted with a human ovarian tumor. Such ovarian carcinoma antigens are shed or secreted from an ovarian tumor into the sera of the immunodeficient animal. Accordingly, certain ovarian carcinoma antigens provided herein are secreted antigens. Certain nucleic acid sequences of the subject invention generally comprise a DNA or RNA sequence that encodes all or a portion of such a polypeptide, or that is complementary to such a sequence.

The present invention further provides ovarian carcinoma sequences that are identified using techniques to evaluate altered expression within an ovarian tumor. Such sequences may be polynucleotide or protein sequences. Ovarian carcinoma sequences are generally expressed in an ovarian tumor at a level that is at least two fold, and preferably at least five fold, greater than the level of expression in normal ovarian tissue, as determined using a representative assay provided herein. Certain partial ovarian carcinoma polynucleotide sequences are presented herein. Proteins encoded by genes comprising such polynucleotide sequences (or complements thereof) are also considered ovarian carcinoma proteins.

Antibodies are generally immune system proteins, or antigen-binding fragments thereof, that are capable of binding to at least a portion of an ovarian carcinoma polypeptide as described herein. T cells that may be employed within the compositions provided herein are generally T cells (*e.g.*, CD4⁺ and/or CD8⁺) that are specific for such a polypeptide. Certain methods described herein further employ antigen-presenting cells (such as dendritic cells or macrophages) that express an ovarian carcinoma polypeptide as provided herein.

OVARIAN CARCINOMA POLYNUCLEOTIDES

Any polynucleotide that encodes an ovarian carcinoma protein or a portion or other variant thereof as described herein is encompassed by the present invention. Preferred polynucleotides comprise at least 15 consecutive nucleotides, preferably at least 30 consecutive nucleotides, and more preferably at least 45 consecutive nucleotides, that encode a portion of an ovarian carcinoma protein. More preferably, a polynucleotide encodes an immunogenic portion of an ovarian carcinoma protein, such as an ovarian carcinoma antigen. Polynucleotides complementary to any such sequences are also encompassed by the present invention. Polynucleotides may be single-stranded (coding or antisense) or double-stranded, and may be DNA (genomic, cDNA or synthetic) or RNA molecules. Additional coding or non-coding sequences may, but need not, be present

within a polynucleotide of the present invention, and a polynucleotide may, but need not, be linked to other molecules and/or support materials.

Polynucleotides may comprise a native sequence (*i.e.*, an endogenous sequence that encodes an ovarian carcinoma protein or a portion thereof) or may comprise
5 a variant of such a sequence. Polynucleotide variants may contain one or more substitutions, additions, deletions and/or insertions such that the immunogenicity of the encoded polypeptide is not diminished, relative to a native ovarian carcinoma protein. The effect on the immunogenicity of the encoded polypeptide may generally be assessed as described herein. Variants preferably exhibit at least about 70% identity, more preferably
10 at least about 80% identity and most preferably at least about 90% identity to a polynucleotide sequence that encodes a native ovarian carcinoma protein or a portion thereof.

The percent identity for two polynucleotide or polypeptide sequences may be readily determined by comparing sequences using computer algorithms well known to
15 those of ordinary skill in the art, such as Megalign, using default parameters. Comparisons between two sequences are typically performed by comparing the sequences over a comparison window to identify and compare local regions of sequence similarity. A "comparison window" as used herein, refers to a segment of at least about 20 contiguous positions, usually 30 to about 75, or 40 to about 50, in which a sequence may be compared
20 to a reference sequence of the same number of contiguous positions after the two sequences are optimally aligned. Optimal alignment of sequences for comparison may be conducted, for example, using the Megalign program in the Lasergene suite of bioinformatics software (DNASTAR, Inc., Madison, WI), using default parameters. Preferably, the percentage of sequence identity is determined by comparing two optimally aligned sequences over a
25 window of comparison of at least 20 positions, wherein the portion of the polynucleotide or polypeptide sequence in the window may comprise additions or deletions (*i.e.*, gaps) of 20 % or less, usually 5 to 15 %, or 10 to 12%, relative to the reference sequence (which does not contain additions or deletions). The percent identity may be calculated by determining the number of positions at which the identical nucleic acid bases or amino acid residue

5 Variants may also, or alternatively, be substantially homologous to a native gene, or a portion or complement thereof. Such polynucleotide variants are capable of hybridizing under moderately stringent conditions to a naturally occurring DNA sequence encoding a native ovarian carcinoma protein (or a complementary sequence). Suitable moderately stringent conditions include prewashing in a solution of 5 X SSC, 0.5% SDS, 10 1.0 mM EDTA (pH 8.0); hybridizing at 50°C-65°C, 5 X SSC, overnight; followed by washing twice at 65°C for 20 minutes with each of 2X, 0.5X and 0.2X SSC containing 0.1% SDS.

It will be appreciated by those of ordinary skill in the art that, as a result of the degeneracy of the genetic code, there are many nucleotide sequences that encode a polypeptide as described herein. Some of these polynucleotides bear minimal homology to the nucleotide sequence of any native gene. Nonetheless, polynucleotides that vary due to differences in codon usage are specifically contemplated by the present invention. Further, alleles of the genes comprising the polynucleotide sequences provided herein are within the scope of the present invention. Alleles are endogenous genes that are altered as a result of one or more mutations, such as deletions, additions and/or substitutions of nucleotides. The resulting mRNA and protein may, but need not, have an altered structure or function. Alleles may be identified using standard techniques (such as hybridization, amplification and/or database sequence comparison).

10

evaluate differential gene expression. Alternatively, polynucleotides may be amplified from cDNA prepared from ovarian tumor cells. Such polynucleotides may be amplified via polymerase chain reaction (PCR). For this approach, sequence-specific primers may be designed based on the sequences provided herein, and may be purchased or synthesized.

5 An amplified portion may be used to isolate a full length gene from a suitable library (*e.g.*, an ovarian carcinoma cDNA library) using well known techniques. Within such techniques, a library (cDNA or genomic) is screened using one or more polynucleotide probes or primers suitable for amplification. Preferably, a library is size-selected to include larger molecules. Random primed libraries may also be preferred for
10 identifying 5' and upstream regions of genes. Genomic libraries are preferred for obtaining introns and extending 5' sequences.

For hybridization techniques, a partial sequence may be labeled (*e.g.*, by nick-translation or end-labeling with ^{32}P) using well known techniques. A bacterial or bacteriophage library is then screened by hybridizing filters containing denatured bacterial
15 colonies (or lawns containing phage plaques) with the labeled probe (*see* Sambrook et al., *Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Laboratories, Cold Spring Harbor, NY, 1989). Hybridizing colonies or plaques are selected and expanded, and the DNA is isolated for further analysis. cDNA clones may be analyzed to determine the amount of additional sequence by, for example, PCR using a primer from the partial
20 sequence and a primer from the vector. Restriction maps and partial sequences may be generated to identify one or more overlapping clones. The complete sequence may then be determined using standard techniques, which may involve generating a series of deletion clones. The resulting overlapping sequences are then assembled into a single contiguous sequence. A full length cDNA molecule can be generated by ligating suitable fragments,
25 using well known techniques.

Alternatively, there are numerous amplification techniques for obtaining a full length coding sequence from a partial cDNA sequence. Within such techniques, amplification is generally performed via PCR. Any of a variety of commercially available kits may be used to perform the amplification step. Primers may be designed using, for

example, software well known in the art. Primers are preferably 22-30 nucleotides in length, have a GC content of at least 50% and anneal to the target sequence at temperatures of about 68°C to 72°C. The amplified region may be sequenced as described above, and overlapping sequences assembled into a contiguous sequence.

5 One such amplification technique is inverse PCR (*see* Triglia et al., *Nucl. Acids Res.* 16:8186, 1988), which uses restriction enzymes to generate a fragment in the known region of the gene. The fragment is then circularized by intramolecular ligation and used as a template for PCR with divergent primers derived from the known region. Within an alternative approach, sequences adjacent to a partial sequence may be retrieved by
10 amplification with a primer to a linker sequence and a primer specific to a known region. The amplified sequences are typically subjected to a second round of amplification with the same linker primer and a second primer specific to the known region. A variation on this procedure, which employs two primers that initiate extension in opposite directions from the known sequence, is described in WO 96/38591. Additional techniques include capture
15 PCR (Lagerstrom et al., *PCR Methods Applic.* 1:111-19, 1991) and walking PCR (Parker et al., *Nucl. Acids. Res.* 19:3055-60, 1991). Other methods employing amplification may also be employed to obtain a full length cDNA sequence.

 In certain instances, it is possible to obtain a full length cDNA sequence by analysis of sequences provided in an expressed sequence tag (EST) database, such as that
20 available from GenBank. Searches for overlapping ESTs may generally be performed using well known programs (*e.g.*, NCBI BLAST searches), and such ESTs may be used to generate a contiguous full length sequence.

 Certain nucleic acid sequences of cDNA molecules encoding portions of ovarian carcinoma antigens are provided in Figures 1A-1S (SEQ ID NOS:1 to 71) and
25 Figures 15A to 15EEE (SEQ ID NOs:82 to 310). The sequences provided in Figures 1A-1S appear to be novel. For sequences in Figures 15A-15EEE, database searches revealed matches having substantial identity. These polynucleotides were isolated by serological screening of an ovarian tumor cDNA expression library, using a technique designed to identify secreted tumor antigens. Briefly, a late passage ovarian tumor expression library

was prepared from a SCID-derived human ovarian tumor (OV9334) in the vector λ -screen (Novagen). The sera used for screening were obtained by injecting immunocompetent mice with sera from SCID mice implanted with one late passage ovarian tumors. This technique permits the identification of cDNA molecules that encode immunogenic portions
 5 of secreted tumor antigens.

The polynucleotides recited herein, as well as full length polynucleotides comprising such sequences, other portions of such full length polynucleotides, and sequences complementary to all or a portion of such full length molecules, are specifically encompassed by the present invention. It will be apparent to those of ordinary skill in the
 10 art that this technique can also be applied to the identification of antigens that are secreted from other types of tumors.

Other nucleic acid sequences of cDNA molecules encoding portions of ovarian carcinoma proteins are provided in Figures 4-9 (SEQ ID NOs:75-81), as well as SEQ ID NOs:313-384. These sequences were identified by screening a microarray of
 15 cDNAs for tumor-associated expression (*i.e.*, expression that is at least five fold greater in an ovarian tumor than in normal ovarian tissue, as determined using a representative assay provided herein). Such screens were performed using a Synteni microarray (Palo Alto, CA) according to the manufacturer's instructions (and essentially as described by Schena et al., *Proc. Natl. Acad. Sci. USA* 93:10614-10619, 1996 and Heller et al., *Proc. Natl. Acad.*
 20 *Sci. USA* 94:2150-2155, 1997). SEQ ID NOs:311 and 391 provide full length sequences incorporating certain of these nucleic acid sequences.

Any of a variety of well known techniques may be used to evaluate tumor-associated expression of a cDNA. For example, hybridization techniques using labeled polynucleotide probes may be employed. Alternatively, or in addition, amplification
 25 techniques such as real-time PCR may be used (*see* Gibson et al., *Genome Research* 6:995-1001, 1996; Heid et al., *Genome Research* 6:986-994, 1996). Real-time PCR is a technique that evaluates the level of PCR product accumulation during amplification. This technique permits quantitative evaluation of mRNA levels in multiple samples. Briefly, mRNA is extracted from tumor and normal tissue and cDNA is prepared using standard techniques.

Real-time PCR may be performed, for example, using a Perkin Elmer/Applied Biosystems (Foster City, CA) 7700 Prism instrument. Matching primers and fluorescent probes may be designed for genes of interest using, for example, the primer express program provided by Perkin Elmer/Applied Biosystems (Foster City, CA). Optimal concentrations of primers and probes may be initially determined by those of ordinary skill in the art, and control (e.g., β -actin) primers and probes may be obtained commercially from, for example, Perkin Elmer/Applied Biosystems (Foster City, CA). To quantitate the amount of specific RNA in a sample, a standard curve is generated alongside using a plasmid containing the gene of interest. Standard curves may be generated using the Ct values determined in the real-time PCR, which are related to the initial cDNA concentration used in the assay. Standard dilutions ranging from 10^{-10} to 10^{-6} copies of the gene of interest are generally sufficient. In addition, a standard curve is generated for the control sequence. This permits standardization of initial RNA content of a tissue sample to the amount of control for comparison purposes.

Polynucleotide variants may generally be prepared by any method known in the art, including chemical synthesis by, for example, solid phase phosphoramidite chemical synthesis. Modifications in a polynucleotide sequence may also be introduced using standard mutagenesis techniques, such as oligonucleotide-directed site-specific mutagenesis (*see* Adelman et al., *DNA* 2:183, 1983). Alternatively, RNA molecules may be generated by *in vitro* or *in vivo* transcription of DNA sequences encoding an ovarian carcinoma antigen, or portion thereof, provided that the DNA is incorporated into a vector with a suitable RNA polymerase promoter (such as T7 or SP6). Certain portions may be used to prepare an encoded polypeptide, as described herein. In addition, or alternatively, a portion may be administered to a patient such that the encoded polypeptide is generated *in vivo*.

A portion of a sequence complementary to a coding sequence (*i.e.*, an antisense polynucleotide) may also be used as a probe or to modulate gene expression. cDNA constructs that can be transcribed into antisense RNA may also be introduced into cells or tissues to facilitate the production of antisense RNA. An antisense polynucleotide

5

10

20

25

may be incorporated into a viral vector such as, but not limited to, adenovirus, adeno-associated virus, retrovirus, or vaccinia or other pox virus (e.g., avian pox virus). Techniques for incorporating DNA into such vectors are well known to those of ordinary skill in the art. A retroviral vector may additionally transfer or incorporate a gene for a selectable marker (to aid in the identification or selection of transduced cells) and/or a targeting moiety, such as a gene that encodes a ligand for a receptor on a specific target cell, to render the vector target specific. Targeting may also be accomplished using an antibody, by methods known to those of ordinary skill in the art.

Other formulations for therapeutic purposes include colloidal dispersion systems, such as macromolecule complexes, nanocapsules, microspheres, beads, and lipid-based systems including oil-in-water emulsions, micelles, mixed micelles, and liposomes. A preferred colloidal system for use as a delivery vehicle *in vitro* and *in vivo* is a liposome (i.e., an artificial membrane vesicle). The preparation and use of such systems is well known in the art.

15

OVARIAN CARCINOMA POLYPEPTIDES

Within the context of the present invention, polypeptides may comprise at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof, as described herein. As noted above, certain ovarian carcinoma proteins are ovarian carcinoma antigens that are expressed by ovarian tumor cells and react detectably within an immunoassay (such as an ELISA) with antisera generated against serum from an immunodeficient animal implanted with an ovarian tumor. Other ovarian carcinoma proteins are encoded by ovarian carcinoma polynucleotides recited herein. Polypeptides as described herein may be of any length. Additional sequences derived from the native protein and/or heterologous sequences may be present, and such sequences may (but need not) possess further immunogenic or antigenic properties.

25

An "immunogenic portion," as used herein is a portion of an antigen that is recognized (i.e., specifically bound) by a B-cell and/or T-cell surface antigen receptor. Such immunogenic portions generally comprise at least 5 amino acid residues, more

preferably at least 10, and still more preferably at least 20 amino acid residues of an ovarian carcinoma protein or a variant thereof. Preferred immunogenic portions are encoded by cDNA molecules isolated as described herein. Further immunogenic portions may generally be identified using well known techniques, such as those summarized in Paul,
 5 *Fundamental Immunology*, 3rd ed., 243-247 (Raven Press, 1993) and references cited therein. Such techniques include screening polypeptides for the ability to react with ovarian carcinoma protein-specific antibodies, antisera and/or T-cell lines or clones. As used herein, antisera and antibodies are "ovarian carcinoma protein-specific" if they specifically bind to an ovarian carcinoma protein (*i.e.*, they react with the ovarian
 10 carcinoma protein in an ELISA or other immunoassay, and do not react detectably with unrelated proteins). Such antisera, antibodies and T cells may be prepared as described herein, and using well known techniques. An immunogenic portion of a native ovarian carcinoma protein is a portion that reacts with such antisera, antibodies and/or T-cells at a level that is not substantially less than the reactivity of the full length polypeptide (*e.g.*, in
 15 an ELISA and/or T-cell reactivity assay). Such immunogenic portions may react within such assays at a level that is similar to or greater than the reactivity of the full length protein. Such screens may generally be performed using methods well known to those of ordinary skill in the art, such as those described in Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988. For example, a polypeptide
 20 may be immobilized on a solid support and contacted with patient sera to allow binding of antibodies within the sera to the immobilized polypeptide. Unbound sera may then be removed and bound antibodies detected using, for example, ^{125}I -labeled Protein A.

As noted above, a composition may comprise a variant of a native ovarian carcinoma protein. A polypeptide "variant," as used herein, is a polypeptide that differs
 25 from a native ovarian carcinoma protein in one or more substitutions, deletions, additions and/or insertions, such that the immunogenicity of the polypeptide is not substantially diminished. In other words, the ability of a variant to react with ovarian carcinoma protein-specific antisera may be enhanced or unchanged, relative to the native ovarian carcinoma protein, or may be diminished by less than 50%, and preferably less than 20%, relative to

the native ovarian carcinoma protein. Such variants may generally be identified by modifying one of the above polypeptide sequences and evaluating the reactivity of the modified polypeptide with ovarian carcinoma protein-specific antibodies or antisera as described herein. Preferred variants include those in which one or more portions, such as

5 an N-terminal leader sequence or transmembrane domain, have been removed. Other preferred variants include variants in which a small portion (*e.g.*, 1-30 amino acids, preferably 5-15 amino acids) has been removed from the N- and/or C-terminal of the mature protein.

Polypeptide variants preferably exhibit at least about 70%, more preferably

10 at least about 90% and most preferably at least about 95% identity to the native polypeptide. Preferably, a variant contains conservative substitutions. A "conservative substitution" is one in which an amino acid is substituted for another amino acid that has similar properties, such that one skilled in the art of peptide chemistry would expect the secondary structure and hydrophobic nature of the polypeptide to be substantially

15 unchanged. Amino acid substitutions may generally be made on the basis of similarity in polarity, charge, solubility, hydrophobicity, hydrophilicity and/or the amphipathic nature of the residues. For example, negatively charged amino acids include aspartic acid and glutamic acid; positively charged amino acids include lysine and arginine; and amino acids with uncharged polar head groups having similar hydrophilicity values include leucine,

20 isoleucine and valine; glycine and alanine; asparagine and glutamine; and serine, threonine, phenylalanine and tyrosine. Other groups of amino acids that may represent conservative changes include: (1) ala, pro, gly, glu, asp, gln, asn, ser, thr; (2) cys, ser, tyr, thr; (3) val, ile, leu, met, ala, phe; (4) lys, arg, his; and (5) phe, tyr, trp, his. A variant may also, or alternatively, contain nonconservative changes. Variants may also (or alternatively) be

25 modified by, for example, the deletion or addition of amino acids that have minimal influence on the immunogenicity, secondary structure and hydrophobic nature of the polypeptide.

As noted above, polypeptides may comprise a signal (or leader) sequence at the N-terminal end of the protein which co-translationally or post-translationally directs

transfer of the protein. The polypeptide may also be conjugated to a linker or other sequence for ease of synthesis, purification or identification of the polypeptide (e.g., poly-His), or to enhance binding of the polypeptide to a solid support. For example, a polypeptide may be conjugated to an immunoglobulin Fc region.

5 Polypeptides may be prepared using any of a variety of well known techniques. Recombinant polypeptides encoded by DNA sequences as described above may be readily prepared from the DNA sequences using any of a variety of expression vectors known to those of ordinary skill in the art. Expression may be achieved in any appropriate host cell that has been transformed or transfected with an expression vector
10 containing a DNA molecule that encodes a recombinant polypeptide. Suitable host cells include prokaryotes, yeast and higher eukaryotic cells. Preferably, the host cells employed are *E. coli*, yeast or a mammalian cell line such as COS or CHO. Supernatants from suitable host/vector systems which secrete recombinant protein or polypeptide into culture media may be first concentrated using a commercially available filter. Following
15 concentration, the concentrate may be applied to a suitable purification matrix such as an affinity matrix or an ion exchange resin. Finally, one or more reverse phase HPLC steps can be employed to further purify a recombinant polypeptide.

Portions and other variants having fewer than about 100 amino acids, and generally fewer than about 50 amino acids, may also be generated by synthetic means,
20 using techniques well known to those of ordinary skill in the art. For example, such polypeptides may be synthesized using any of the commercially available solid-phase techniques, such as the Merrifield solid-phase synthesis method, where amino acids are sequentially added to a growing amino acid chain. See Merrifield, *J. Am. Chem. Soc.* 85:2149-2146, 1963. Equipment for automated synthesis of polypeptides is commercially
25 available from suppliers such as Applied BioSystems, Inc. (Foster City, CA), and may be operated according to the manufacturer's instructions.

Within certain specific embodiments, a polypeptide may be a fusion protein that comprises multiple polypeptides as described herein, or that comprises one polypeptide as described herein and a known tumor antigen, such as an ovarian carcinoma protein or a

variant of such a protein. A fusion partner may, for example, assist in providing T helper epitopes (an immunological fusion partner), preferably T helper epitopes recognized by humans, or may assist in expressing the protein (an expression enhancer) at higher yields than the native recombinant protein. Certain preferred fusion partners are both
 5 immunological and expression enhancing fusion partners. Other fusion partners may be selected so as to increase the solubility of the protein or to enable the protein to be targeted to desired intracellular compartments. Still further fusion partners include affinity tags, which facilitate purification of the protein.

Fusion proteins may generally be prepared using standard techniques,
 10 including chemical conjugation. Preferably, a fusion protein is expressed as a recombinant protein, allowing the production of increased levels, relative to a non-fused protein, in an expression system. Briefly, DNA sequences encoding the polypeptide components may be assembled separately, and ligated into an appropriate expression vector. The 3' end of the DNA sequence encoding one polypeptide component is ligated, with or without a peptide
 15 linker, to the 5' end of a DNA sequence encoding the second polypeptide component so that the reading frames of the sequences are in phase. This permits translation into a single fusion protein that retains the biological activity of both component polypeptides.

A peptide linker sequence may be employed to separate the first and the second polypeptide components by a distance sufficient to ensure that each polypeptide
 20 folds into its secondary and tertiary structures. Such a peptide linker sequence is incorporated into the fusion protein using standard techniques well known in the art. Suitable peptide linker sequences may be chosen based on the following factors: (1) their ability to adopt a flexible extended conformation; (2) their inability to adopt a secondary structure that could interact with functional epitopes on the first and second polypeptides;
 25 and (3) the lack of hydrophobic or charged residues that might react with the polypeptide functional epitopes. Preferred peptide linker sequences contain Gly, Asn and Ser residues. Other near neutral amino acids, such as Thr and Ala may also be used in the linker sequence. Amino acid sequences which may be usefully employed as linkers include those disclosed in Maratea et al., *Gene* 40:39-46, 1985; Murphy et al., *Proc. Natl. Acad. Sci. USA*

5

10

15

20

25

as amidase LYTA (encoded by the *LytA* gene; *Gene* 43:265-292, 1986). LYTA is an autolysin that specifically degrades certain bonds in the peptidoglycan backbone. The C-terminal domain of the LYTA protein is responsible for the affinity to the choline or to some choline analogues such as DEAE. This property has been exploited for the development of *E. coli* C-LYTA expressing plasmids useful for expression of fusion proteins. Purification of hybrid proteins containing the C-LYTA fragment at the amino terminus has been described (*see Biotechnology* 10:795-798, 1992). Within a preferred embodiment, a repeat portion of LYTA may be incorporated into a fusion protein. A repeat portion is found in the C-terminal region starting at residue 178. A particularly preferred repeat portion incorporates residues 188-305.

In general, polypeptides (including fusion proteins) and polynucleotides as described herein are isolated. An "isolated" polypeptide or polynucleotide is one that is removed from its original environment. For example, a naturally-occurring protein is isolated if it is separated from some or all of the coexisting materials in the natural system. Preferably, such polypeptides are at least about 90% pure, more preferably at least about 95% pure and most preferably at least about 99% pure. A polynucleotide is considered to be isolated if, for example, it is cloned into a vector that is not a part of the natural environment.

BINDING AGENTS

The present invention further provides agents, such as antibodies and antigen-binding fragments thereof, that specifically bind to an ovarian carcinoma protein. As used herein, an antibody, or antigen-binding fragment thereof, is said to "specifically bind" to an ovarian carcinoma protein if it reacts at a detectable level (within, for example, an ELISA) with an ovarian carcinoma protein, and does not react detectably with unrelated proteins under similar conditions. As used herein, "binding" refers to a noncovalent association between two separate molecules such that a "complex" is formed. The ability to bind may be evaluated by, for example, determining a binding constant for the formation of the complex. The binding constant is the value obtained when the concentration of the

complex is divided by the product of the component concentrations. In general, two compounds are said to "bind," in the context of the present invention, when the binding constant for complex formation exceeds about 10^3 L/mol. The binding constant may be determined using methods well known in the art.

5 Binding agents may be further capable of differentiating between patients with and without a cancer, such as ovarian cancer, using the representative assays provided herein. In other words, antibodies or other binding agents that bind to a ovarian carcinoma antigen will generate a signal indicating the presence of a cancer in at least about 20% of patients with the disease, and will generate a negative signal indicating the absence of the
10 disease in at least about 90% of individuals without the cancer. To determine whether a binding agent satisfies this requirement, biological samples (*e.g.*, blood, sera, leukophoresis, urine and/or tumor biopsies) from patients with and without a cancer (as determined using standard clinical tests) may be assayed as described herein for the presence of polypeptides that bind to the binding agent. It will be apparent that a
15 statistically significant number of samples with and without the disease should be assayed. Each binding agent should satisfy the above criteria; however, those of ordinary skill in the art will recognize that binding agents may be used in combination to improve sensitivity.

Any agent that satisfies the above requirements may be a binding agent. For example, a binding agent may be a ribosome, with or without a peptide component, an
20 RNA molecule or a polypeptide. In a preferred embodiment, a binding agent is an antibody or an antigen-binding fragment thereof. Antibodies may be prepared by any of a variety of techniques known to those of ordinary skill in the art. *See, e.g.*, Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988. In general, antibodies can be produced by cell culture techniques, including the generation of
25 monoclonal antibodies as described herein, or via transfection of antibody genes into suitable bacterial or mammalian cell hosts, in order to allow for the production of recombinant antibodies. In one technique, an immunogen comprising the polypeptide is initially injected into any of a wide variety of mammals (*e.g.*, mice, rats, rabbits, sheep or goats). In this step, the polypeptides of this invention may serve as the immunogen without

modification. Alternatively, particularly for relatively short polypeptides, a superior immune response may be elicited if the polypeptide is joined to a carrier protein, such as bovine serum albumin or keyhole limpet hemocyanin. The immunogen is injected into the animal host, preferably according to a predetermined schedule incorporating one or more
5 booster immunizations, and the animals are bled periodically. Polyclonal antibodies specific for the polypeptide may then be purified from such antisera by, for example, affinity chromatography using the polypeptide coupled to a suitable solid support.

Monoclonal antibodies specific for an antigenic polypeptide of interest may be prepared, for example, using the technique of Kohler and Milstein, *Eur. J. Immunol.*
10 6:511-519, 1976, and improvements thereto. Briefly, these methods involve the preparation of immortal cell lines capable of producing antibodies having the desired specificity (*i.e.*, reactivity with the polypeptide of interest). Such cell lines may be produced, for example, from spleen cells obtained from an animal immunized as described above. The spleen cells are then immortalized by, for example, fusion with a myeloma cell
15 fusion partner, preferably one that is syngeneic with the immunized animal. A variety of fusion techniques may be employed. For example, the spleen cells and myeloma cells may be combined with a nonionic detergent for a few minutes and then plated at low density on a selective medium that supports the growth of hybrid cells, but not myeloma cells. A preferred selection technique uses HAT (hypoxanthine, aminopterin, thymidine) selection.
20 After a sufficient time, usually about 1 to 2 weeks, colonies of hybrids are observed. Single colonies are selected and their culture supernatants tested for binding activity against the polypeptide. Hybridomas having high reactivity and specificity are preferred.

Monoclonal antibodies may be isolated from the supernatants of growing hybridoma colonies. In addition, various techniques may be employed to enhance the
25 yield, such as injection of the hybridoma cell line into the peritoneal cavity of a suitable vertebrate host, such as a mouse. Monoclonal antibodies may then be harvested from the ascites fluid or the blood. Contaminants may be removed from the antibodies by conventional techniques, such as chromatography, gel filtration, precipitation, and

extraction. The polypeptides of this invention may be used in the purification process in, for example, an affinity chromatography step.

Within certain embodiments, the use of antigen-binding fragments of antibodies may be preferred. Such fragments include Fab fragments, which may be prepared using standard techniques. Briefly, immunoglobulins may be purified from rabbit serum by affinity chromatography on Protein A bead columns (Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988) and digested by papain to yield Fab and Fc fragments. The Fab and Fc fragments may be separated by affinity chromatography on protein A bead columns.

Monoclonal antibodies of the present invention may be coupled to one or more therapeutic agents. Suitable agents in this regard include radionuclides, differentiation inducers, drugs, toxins, and derivatives thereof. Preferred radionuclides include ^{90}Y , ^{123}I , ^{125}I , ^{131}I , ^{186}Re , ^{188}Re , ^{211}At , and ^{212}Bi . Preferred drugs include methotrexate, and pyrimidine and purine analogs. Preferred differentiation inducers include phorbol esters and butyric acid. Preferred toxins include ricin, abrin, diphtheria toxin, cholera toxin, gelonin, *Pseudomonas* exotoxin, *Shigella* toxin, and pokeweed antiviral protein.

A therapeutic agent may be coupled (*e.g.*, covalently bonded) to a suitable monoclonal antibody either directly or indirectly (*e.g.*, via a linker group). A direct reaction between an agent and an antibody is possible when each possesses a substituent capable of reacting with the other. For example, a nucleophilic group, such as an amino or sulfhydryl group, on one may be capable of reacting with a carbonyl-containing group, such as an anhydride or an acid halide, or with an alkyl group containing a good leaving group (*e.g.*, a halide) on the other.

Alternatively, it may be desirable to couple a therapeutic agent and an antibody via a linker group. A linker group can function as a spacer to distance an antibody from an agent in order to avoid interference with binding capabilities. A linker group can also serve to increase the chemical reactivity of a substituent on an agent or an antibody, and thus increase the coupling efficiency. An increase in chemical reactivity may also

facilitate the use of agents, or functional groups on agents, which otherwise would not be possible.

It will be evident to those skilled in the art that a variety of bifunctional or polyfunctional reagents, both homo- and hetero-functional (such as those described in the catalog of the Pierce Chemical Co., Rockford, IL), may be employed as the linker group. Coupling may be effected, for example, through amino groups, carboxyl groups, sulfhydryl groups or oxidized carbohydrate residues. There are numerous references describing such methodology, *e.g.*, U.S. Patent No. 4,671,958, to Rodwell et al.

Where a therapeutic agent is more potent when free from the antibody portion of the immunoconjugates of the present invention, it may be desirable to use a linker group which is cleavable during or upon internalization into a cell. A number of different cleavable linker groups have been described. The mechanisms for the intracellular release of an agent from these linker groups include cleavage by reduction of a disulfide bond (*e.g.*, U.S. Patent No. 4,489,710, to Spitler), by irradiation of a photolabile bond (*e.g.*, U.S. Patent No. 4,625,014, to Senter et al.), by hydrolysis of derivatized amino acid side chains (*e.g.*, U.S. Patent No. 4,638,045, to Kohn et al.), by serum complement-mediated hydrolysis (*e.g.*, U.S. Patent No. 4,671,958, to Rodwell et al.), and acid-catalyzed hydrolysis (*e.g.*, U.S. Patent No. 4,569,789, to Blattler et al.).

It may be desirable to couple more than one agent to an antibody. In one embodiment, multiple molecules of an agent are coupled to one antibody molecule. In another embodiment, more than one type of agent may be coupled to one antibody. Regardless of the particular embodiment, immunoconjugates with more than one agent may be prepared in a variety of ways. For example, more than one agent may be coupled directly to an antibody molecule, or linkers which provide multiple sites for attachment can be used. Alternatively, a carrier can be used.

A carrier may bear the agents in a variety of ways, including covalent bonding either directly or via a linker group. Suitable carriers include proteins such as albumins (*e.g.*, U.S. Patent No. 4,507,234, to Kato et al.), peptides and polysaccharides such as aminodextran (*e.g.*, U.S. Patent No. 4,699,784, to Shih et al.). A carrier may also

bear an agent by noncovalent bonding or by encapsulation, such as within a liposome vesicle (e.g., U.S. Patent Nos. 4,429,008 and 4,873,088). Carriers specific for radionuclide agents include radiohalogenated small molecules and chelating compounds. For example, U.S. Patent No. 4,735,792 discloses representative radiohalogenated small molecules and
5 their synthesis. A radionuclide chelate may be formed from chelating compounds that include those containing nitrogen and sulfur atoms as the donor atoms for binding the metal, or metal oxide, radionuclide. For example, U.S. Patent No. 4,673,562, to Davison et al. discloses representative chelating compounds and their synthesis.

A variety of routes of administration for the antibodies and
10 immunoconjugates may be used. Typically, administration will be intravenous, intramuscular, subcutaneous or in the bed of a resected tumor. It will be evident that the precise dose of the antibody/immunoconjugate will vary depending upon the antibody used, the antigen density on the tumor, and the rate of clearance of the antibody.

Also provided herein are anti-idiotypic antibodies that mimic an
15 immunogenic portion of an ovarian carcinoma protein. Such antibodies may be raised against an antibody, or antigen-binding fragment thereof, that specifically binds to an immunogenic portion of an ovarian carcinoma protein, using well known techniques. Anti-idiotypic antibodies that mimic an immunogenic portion of an ovarian carcinoma protein are those antibodies that bind to an antibody, or antigen-binding fragment thereof, that
20 specifically binds to an immunogenic portion of an ovarian carcinoma protein, as described herein.

T CELLS

Immunotherapeutic compositions may also, or alternatively, comprise T
25 cells specific for an ovarian carcinoma protein. Such cells may generally be prepared *in vitro* or *ex vivo*, using standard procedures. For example, T cells may be present within (or isolated from) bone marrow, peripheral blood or a fraction of bone marrow or peripheral blood of a mammal, such as a patient, using a commercially available cell separation system, such as the CEPRATE™ system, available from CellPro Inc., Bothell WA (see also

U.S. Patent No. 5,240,856; U.S. Patent No. 5,215,926; WO 89/06280; WO 91/16116 and WO 92/07243). Alternatively, T cells may be derived from related or unrelated humans, non-human animals, cell lines or cultures.

T cells may be stimulated with an ovarian carcinoma polypeptide, polynucleotide encoding an ovarian carcinoma polypeptide and/or an antigen presenting cell (APC) that expresses such a polypeptide. Such stimulation is performed under conditions and for a time sufficient to permit the generation of T cells that are specific for the polypeptide. Preferably, an ovarian carcinoma polypeptide or polynucleotide is present within a delivery vehicle, such as a microsphere, to facilitate the generation of specific T cells.

T cells are considered to be specific for an ovarian carcinoma polypeptide if the T cells kill target cells coated with an ovarian carcinoma polypeptide or expressing a gene encoding such a polypeptide. T cell specificity may be evaluated using any of a variety of standard techniques. For example, within a chromium release assay or proliferation assay, a stimulation index of more than two fold increase in lysis and/or proliferation, compared to negative controls, indicates T cell specificity. Such assays may be performed, for example, as described in Chen et al., *Cancer Res.* 54:1065-1070, 1994. Alternatively, detection of the proliferation of T cells may be accomplished by a variety of known techniques. For example, T cell proliferation can be detected by measuring an increased rate of DNA synthesis (e.g., by pulse-labeling cultures of T cells with tritiated thymidine and measuring the amount of tritiated thymidine incorporated into DNA). Contact with an ovarian carcinoma polypeptide (200 ng/ml - 100 µg/ml, preferably 100 ng/ml - 25 µg/ml) for 3 - 7 days should result in at least a two fold increase in proliferation of the T cells and/or contact as described above for 2-3 hours should result in activation of the T cells, as measured using standard cytokine assays in which a two fold increase in the level of cytokine release (e.g., TNF or IFN-γ) is indicative of T cell activation (see Coligan et al., *Current Protocols in Immunology*, vol. 1, Wiley Interscience (Greene 1998). T cells that have been activated in response to an ovarian carcinoma polypeptide, polynucleotide or ovarian carcinoma polypeptide-expressing APC may be CD4⁺ and/or CD8⁺. Ovarian

carcinoma polypeptide-specific T cells may be expanded using standard techniques. Within preferred embodiments, the T cells are derived from a patient or a related or unrelated donor and are administered to the patient following stimulation and expansion.

For therapeutic purposes, CD4⁺ or CD8⁺ T cells that proliferate in response to an ovarian carcinoma polypeptide, polynucleotide or APC can be expanded in number either *in vitro* or *in vivo*. Proliferation of such T cells *in vitro* may be accomplished in a variety of ways. For example, the T cells can be re-exposed to an ovarian carcinoma polypeptide, with or without the addition of T cell growth factors, such as interleukin-2, and/or stimulator cells that synthesize an ovarian carcinoma polypeptide. Alternatively, one or more T cells that proliferate in the presence of an ovarian carcinoma polypeptide can be expanded in number by cloning. Methods for cloning cells are well known in the art, and include limiting dilution. Following expansion, the cells may be administered back to the patient as described, for example, by Chang et al., *Crit. Rev. Oncol. Hematol.* 22:213, 1996.

PHARMACEUTICAL COMPOSITIONS AND VACCINES

Within certain aspects, polypeptides, polynucleotides, binding agents and/or immune system cells as described herein may be incorporated into pharmaceutical compositions or vaccines. Pharmaceutical compositions comprise one or more such compounds or cells and a physiologically acceptable carrier. Vaccines may comprise one or more such compounds or cells and a non-specific immune response enhancer. A non-specific immune response enhancer may be any substance that enhances an immune response to an exogenous antigen. Examples of non-specific immune response enhancers include adjuvants, biodegradable microspheres (*e.g.*, polylactic galactide) and liposomes (into which the compound is incorporated; *see e.g.*, Fullerton, U.S. Patent No. 4,235,877). Vaccine preparation is generally described in, for example, M.F. Powell and M.J. Newman, eds., "Vaccine Design (the subunit and adjuvant approach)," Plenum Press (NY, 1995). Pharmaceutical compositions and vaccines within the scope of the present invention may also contain other compounds, which may be biologically active or inactive. For example,

one or more immunogenic portions of other tumor antigens may be present, either incorporated into a fusion polypeptide or as a separate compound within the composition or vaccine.

A pharmaceutical composition or vaccine may contain DNA encoding one or more of the polypeptides as described above, such that the polypeptide is generated *in situ*. As noted above, the DNA may be present within any of a variety of delivery systems known to those of ordinary skill in the art, including nucleic acid expression systems, bacteria and viral expression systems. Appropriate nucleic acid expression systems contain the necessary DNA sequences for expression in the patient (such as a suitable promoter and terminating signal). Bacterial delivery systems involve the administration of a bacterium (such as *Bacillus-Calmette-Guerrin*) that expresses an immunogenic portion of the polypeptide on its cell surface. In a preferred embodiment, the DNA may be introduced using a viral expression system (*e.g.*, vaccinia or other pox virus, retrovirus, or adenovirus), which may involve the use of a non-pathogenic (defective), replication competent virus. Suitable systems are disclosed, for example, in Fisher-Hoch et al., *PNAS* 86:317-321, 1989; Flexner et al., *Ann. N.Y. Acad. Sci.* 569:86-103, 1989; Flexner et al., *Vaccine* 8:17-21, 1990; U.S. Patent Nos. 4,603,112, 4,769,330, and 5,017,487; WO 89/01973; U.S. Patent No. 4,777,127; GB 2,200,651; EP 0,345,242; WO 91/02805; Berkner, *Biotechniques* 6:616-627, 1988; Rosenfeld et al., *Science* 252:431-434, 1991; Kolls et al., *PNAS* 91:215-219, 1994; Kass-Eisler et al., *PNAS* 90:11498-11502, 1993; Guzman et al., *Circulation* 88:2838-2848, 1993; and Guzman et al., *Cir. Res.* 73:1202-1207, 1993. Techniques for incorporating DNA into such expression systems are well known to those of ordinary skill in the art. The DNA may also be "naked," as described, for example, in Ulmer et al., *Science* 259:1745-1749, 1993 and reviewed by Cohen, *Science* 259:1691-1692, 1993. The uptake of naked DNA may be increased by coating the DNA onto biodegradable beads, which are efficiently transported into the cells.

While any suitable carrier known to those of ordinary skill in the art may be employed in the pharmaceutical compositions of this invention, the type of carrier will vary depending on the mode of administration. Compositions of the present invention may be

formulated for any appropriate manner of administration, including for example, topical, oral, nasal, intravenous, intracranial, intraperitoneal, subcutaneous or intramuscular administration. For parenteral administration, such as subcutaneous injection, the carrier preferably comprises water, saline, alcohol, a fat, a wax or a buffer. For oral
 5 administration, any of the above carriers or a solid carrier, such as mannitol, lactose, starch, magnesium stearate, sodium saccharine, talcum, cellulose, glucose, sucrose, and magnesium carbonate, may be employed. Biodegradable microspheres (*e.g.*, polylactate polyglycolate) may also be employed as carriers for the pharmaceutical compositions of this invention. Suitable biodegradable microspheres are disclosed, for example, in U.S.
 10 Patent Nos. 4,897,268 and 5,075,109.

Such compositions may also comprise buffers (*e.g.*, neutral buffered saline or phosphate buffered saline), carbohydrates (*e.g.*, glucose, mannose, sucrose or dextrans), mannitol, proteins, polypeptides or amino acids such as glycine, antioxidants, chelating agents such as EDTA or glutathione, adjuvants (*e.g.*, aluminum hydroxide) and/or
 15 preservatives. Alternatively, compositions of the present invention may be formulated as a lyophilizate. Compounds may also be encapsulated within liposomes using well known technology.

Any of a variety of non-specific immune response enhancers may be employed in the vaccines of this invention. For example, an adjuvant may be included.
 20 Most adjuvants contain a substance designed to protect the antigen from rapid catabolism, such as aluminum hydroxide or mineral oil, and a stimulator of immune responses, such as lipid A, *Bordetella pertussis* or *Mycobacterium tuberculosis* derived proteins. Suitable adjuvants are commercially available as, for example, Freund's Incomplete Adjuvant and Complete Adjuvant (Difco Laboratories, Detroit, MI), Merck Adjuvant 65 (Merck and
 25 Company, Inc., Rahway, NJ), alum, biodegradable microspheres, monophosphoryl lipid A and quil A. Cytokines, such as GM-CSF or interleukin-2, -7, or -12, may also be used as adjuvants.

Within the vaccines provided herein, the adjuvant composition is preferably designed to induce an immune response predominantly of the Th1 type. High levels of

Th1-type cytokines (*e.g.*, IFN- γ , IL-2 and IL-12) tend to favor the induction of cell mediated immune responses to an administered antigen. In contrast, high levels of Th2-type cytokines (*e.g.*, IL-4, IL-5, IL-6, IL-10 and TNF- β) tend to favor the induction of humoral immune responses. Following application of a vaccine as provided herein, a patient will support an immune response that includes Th1- and Th2-type responses. Within a preferred embodiment, in which a response is predominantly Th1-type, the level of Th1-type cytokines will increase to a greater extent than the level of Th2-type cytokines. The levels of these cytokines may be readily assessed using standard assays. For a review of the families of cytokines, see Mosmann and Coffman, *Ann. Rev. Immunol.* 7:145-173, 1989.

Preferred adjuvants for use in eliciting a predominantly Th1-type response include, for example, a combination of monophosphoryl lipid A, preferably 3-de-O-acylated monophosphoryl lipid A (3D-MPL), together with an aluminum salt. MPL adjuvants are available from Ribi ImmunoChem Research Inc. (Hamilton, MT; *see* US Patent Nos. 4,436,727; 4,877,611; 4,866,034 and 4,912,094). Also preferred is AS-2 (SmithKline Beecham). CpG-containing oligonucleotides (in which the CpG dinucleotide is unmethylated) also induce a predominantly Th1 response. Such oligonucleotides are well known and are described, for example, in WO 96/02555. Another preferred adjuvant is a saponin, preferably QS21, which may be used alone or in combination with other adjuvants. For example, an enhanced system involves the combination of a monophosphoryl lipid A and saponin derivative, such as the combination of QS21 and 3D-MPL as described in WO 94/00153, or a less reactogenic composition where the QS21 is quenched with cholesterol, as described in WO 96/33739. Other preferred formulations comprises an oil-in-water emulsion and tocopherol. A particularly potent adjuvant formulation involving QS21, 3D-MPL and tocopherol in an oil-in-water emulsion is described in WO 95/17210. Any vaccine provided herein may be prepared using well known methods that result in a combination of antigen, immune response enhancer and a suitable carrier or excipient.

The compositions described herein may be administered as part of a sustained release formulation (*i.e.*, a formulation such as a capsule or sponge that effects a slow release of compound following administration). Such formulations may generally be prepared using well known technology and administered by, for example, oral, rectal or subcutaneous implantation, or by implantation at the desired target site. Sustained-release formulations may contain a polypeptide, polynucleotide or antibody dispersed in a carrier matrix and/or contained within a reservoir surrounded by a rate controlling membrane. Carriers for use within such formulations are biocompatible, and may also be biodegradable; preferably the formulation provides a relatively constant level of active component release. The amount of active compound contained within a sustained release formulation depends upon the site of implantation, the rate and expected duration of release and the nature of the condition to be treated or prevented.

Any of a variety of delivery vehicles may be employed within pharmaceutical compositions and vaccines to facilitate production of an antigen-specific immune response that targets tumor cells. Delivery vehicles include antigen presenting cells (APCs), such as dendritic cells, macrophages, B cells, monocytes and other cells that may be engineered to be efficient APCs. Such cells may, but need not, be genetically modified to increase the capacity for presenting the antigen, to improve activation and/or maintenance of the T cell response, to have anti-tumor effects *per se* and/or to be immunologically compatible with the receiver (*i.e.*, matched HLA haplotype). APCs may generally be isolated from any of a variety of biological fluids and organs, including tumor and peritumoral tissues, and may be autologous, allogeneic, syngeneic or xenogeneic cells.

Certain preferred embodiments of the present invention use dendritic cells or progenitors thereof as antigen-presenting cells. Dendritic cells are highly potent APCs (Banchereau and Steinman, *Nature* 392:245-251, 1998) and have been shown to be effective as a physiological adjuvant for eliciting prophylactic or therapeutic antitumor immunity (*see* Timmerman and Levy, *Ann. Rev. Med.* 50:507-529, 1999). In general, dendritic cells may be identified based on their typical shape (stellate *in situ*, with marked cytoplasmic processes (dendrites) visible *in vitro*) and based on the lack of differentiation

markers of B cells (CD19 and CD20), T cells (CD3), monocytes (CD14) and natural killer cells (CD56), as determined using standard assays. Dendritic cells may, of course, be engineered to express specific cell-surface receptors or ligands that are not commonly found on dendritic cells *in vivo* or *ex vivo*, and such modified dendritic cells are contemplated by the present invention. As an alternative to dendritic cells, secreted vesicles antigen-loaded dendritic cells (called exosomes) may be used within a vaccine (*see* Zitvogel et al., *Nature Med.* 4:594-600, 1998).

Dendritic cells and progenitors may be obtained from peripheral blood, bone marrow, tumor-infiltrating cells, peritumoral tissues-infiltrating cells, lymph nodes, spleen, skin, umbilical cord blood or any other suitable tissue or fluid. For example, dendritic cells may be differentiated *ex vivo* by adding a combination of cytokines such as GM-CSF, IL-4, IL-13 and/or TNF α to cultures of monocytes harvested from peripheral blood. Alternatively, CD34 positive cells harvested from peripheral blood, umbilical cord blood or bone marrow may be differentiated into dendritic cells by adding to the culture medium combinations of GM-CSF, IL-3, TNF α , CD40 ligand, LPS, flt3 ligand and/or other compound(s) that induce maturation and proliferation of dendritic cells.

Dendritic cells are conveniently categorized as "immature" and "mature" cells, which allows a simple way to discriminate between two well characterized phenotypes. However, this nomenclature should not be construed to exclude all possible intermediate stages of differentiation. Immature dendritic cells are characterized as APC with a high capacity for antigen uptake and processing, which correlates with the high expression of Fc γ receptor, mannose receptor and DEC-205 marker. The mature phenotype is typically characterized by a lower expression of these markers, but a high expression of cell surface molecules responsible for T cell activation such as class I and class II MHC, adhesion molecules (*e.g.*, CD54 and CD11) and costimulatory molecules (*e.g.*, CD40, CD80 and CD86).

APCs may generally be transfected with a polynucleotide encoding a ovarian carcinoma antigen (or portion or other variant thereof) such that the antigen, or an immunogenic portion thereof, is expressed on the cell surface. Such transfection may take

place *ex vivo*, and a composition or vaccine comprising such transfected cells may then be used for therapeutic purposes, as described herein. Alternatively, a gene delivery vehicle that targets a dendritic or other antigen presenting cell may be administered to a patient, resulting in transfection that occurs *in vivo*. *In vivo* and *ex vivo* transfection of dendritic cells, for example, may generally be performed using any methods known in the art, such as those described in WO 97/24447, or the gene gun approach described by Mahvi et al., *Immunology and cell Biology* 75:456-460, 1997. Antigen loading of dendritic cells may be achieved by incubating dendritic cells or progenitor cells with the polypeptide, DNA (naked or within a plasmid vector) or RNA; or with antigen-expressing recombinant bacterium or viruses (*e.g.*, vaccinia, fowlpox, adenovirus or lentivirus vectors). Prior to loading, the polypeptide may be covalently conjugated to an immunological partner that provides T cell help (*e.g.*, a carrier molecule). Alternatively, a dendritic cell may be pulsed with a non-conjugated immunological partner, separately or in the presence of the polypeptide.

15

CANCER THERAPY

In further aspects of the present invention, the compositions described herein may be used for immunotherapy of cancer, such as ovarian cancer. Within such methods, pharmaceutical compositions and vaccines are typically administered to a patient. As used herein, a "patient" refers to any warm-blooded animal, preferably a human. A patient may or may not be afflicted with cancer. Accordingly, the above pharmaceutical compositions and vaccines may be used to prevent the development of a cancer or to treat a patient afflicted with a cancer. Within certain preferred embodiments, a patient is afflicted with ovarian cancer. Such cancer may be diagnosed using criteria generally accepted in the art, including the presence of a malignant tumor. Pharmaceutical compositions and vaccines may be administered either prior to or following surgical removal of primary tumors and/or treatment such as administration of radiotherapy or conventional chemotherapeutic drugs.

Within certain embodiments, immunotherapy may be active immunotherapy, in which treatment relies on the *in vivo* stimulation of the endogenous host immune system to react against tumors with the administration of immuno response-modifying agents (such as tumor vaccines, bacterial adjuvants and/or cytokines).

5 Within other embodiments, immunotherapy may be passive immunotherapy, in which treatment involves the delivery of agents with established tumor-immune reactivity (such as effector cells or antibodies) that can directly or indirectly mediate antitumor effects and does not necessarily depend on an intact host immune system. Examples of effector cells include T lymphocytes (such as CD8⁺ cytotoxic T
10 lymphocytes and CD4⁺ T-helper tumor-infiltrating lymphocytes), killer cells (such as Natural Killer cells and lymphokine-activated killer cells), B cells and antigen-presenting cells (such as dendritic cells and macrophages) expressing a polypeptide provided herein. T cell receptors and antibody receptors specific for the polypeptides recited herein may be cloned, expressed and transferred into other vectors or effector cells for adoptive
15 immunotherapy. The polypeptides provided herein may also be used to generate antibodies or anti-idiotypic antibodies (as described above and in U.S. Patent No. 4,918,164) for passive immunotherapy.

Effector cells may generally be obtained in sufficient quantities for adoptive immunotherapy by growth *in vitro*, as described herein. Culture conditions for expanding
20 single antigen-specific effector cells to several billion in number with retention of antigen recognition *in vivo* are well known in the art. Such *in vitro* culture conditions typically use intermittent stimulation with antigen, often in the presence of cytokines (such as IL-2) and non-dividing feeder cells. As noted above, immunoreactive polypeptides as provided herein may be used to rapidly expand antigen-specific T cell cultures in order to generate a
25 sufficient number of cells for immunotherapy. In particular, antigen-presenting cells, such as dendritic, macrophage or B cells, may be pulsed with immunoreactive polypeptides or transfected with one or more polynucleotides using standard techniques well known in the art. For example, antigen-presenting cells can be transfected with a polynucleotide having a promoter appropriate for increasing expression in a recombinant virus or other expression

system. Cultured effector cells for use in therapy must be able to grow and distribute widely, and to survive long term *in vivo*. Studies have shown that cultured effector cells can be induced to grow *in vivo* and to survive long term in substantial numbers by repeated stimulation with antigen supplemented with IL-2 (*see*, for example, Cheever et al.,
 5 *Immunological Reviews* 157:177, 1997).

Alternatively, a vector expressing a polypeptide recited herein may be introduced into stem cells taken from a patient and clonally propagated *in vitro* for autologous transplant back into the same patient.

Routes and frequency of administration, as well as dosage, will vary from
 10 individual to individual, and may be readily established using standard techniques. In general, the pharmaceutical compositions and vaccines may be administered by injection (*e.g.*, intracutaneous, intramuscular, intravenous or subcutaneous), intranasally (*e.g.*, by aspiration), orally or in the bed of a resected tumor. Preferably, between 1 and 10 doses may be administered over a 52 week period. Preferably, 6 doses are administered, at
 15 intervals of 1 month, and booster vaccinations may be given periodically thereafter. Alternate protocols may be appropriate for individual patients. A suitable dose is an amount of a compound that, when administered as described above, is capable of promoting an anti-tumor immune response, and is at least 10-50% above the basal (*i.e.*, untreated) level. Such response can be monitored by measuring the anti-tumor antibodies
 20 in a patient or by vaccine-dependent generation of cytolytic effector cells capable of killing the patient's tumor cells *in vitro*. Such vaccines should also be capable of causing an immune response that leads to an improved clinical outcome (*e.g.*, more frequent remissions, complete or partial or longer disease-free survival) in vaccinated patients as compared to non-vaccinated patients. In general, for pharmaceutical compositions and
 25 vaccines comprising one or more polypeptides, the amount of each polypeptide present in a dose ranges from about 100 μ g to 5 mg per kg of host. Suitable dose sizes will vary with the size of the patient, but will typically range from about 0.1 mL to about 5 mL.

In general, an appropriate dosage and treatment regimen provides the active compound(s) in an amount sufficient to provide therapeutic and/or prophylactic benefit.

Such a response can be monitored by establishing an improved clinical outcome (*e.g.*, more frequent remissions, complete or partial, or longer disease-free survival) in treated patients as compared to non-treated patients. Increases in preexisting immune responses to an ovarian carcinoma antigen generally correlate with an improved clinical outcome. Such immune responses may generally be evaluated using standard proliferation, cytotoxicity or cytokine assays, which may be performed using samples obtained from a patient before and after treatment.

SCREENS FOR IDENTIFYING SECRETED OVARIAN CARCINOMA ANTIGENS

The present invention provides methods for identifying secreted tumor antigens. Within such methods, tumors are implanted into immunodeficient animals such as SCID mice and maintained for a time sufficient to permit secretion of tumor antigens into serum. In general, tumors may be implanted subcutaneously or within the gonadal fat pad of an immunodeficient animal and maintained for 1-9 months, preferably 1-4 months. Implantation may generally be performed as described in WO 97/18300. The serum containing secreted antigens is then used to prepare antisera in immunocompetent mice, using standard techniques and as described herein. Briefly, 50-100 μ L of sera (pooled from three sets of immunodeficient mice, each set bearing a different SCID-derived human ovarian tumor) may be mixed 1:1 (vol:vol) with an appropriate adjuvant, such as RIBI-MPL or MPL + TDM (Sigma Chemical Co., St. Louis, MO) and injected intraperitoneally into syngeneic immunocompetent animals at monthly intervals for a total of 5 months. Antisera from animals immunized in such a manner may be obtained by drawing blood after the third, fourth and fifth immunizations. The resulting antiserum is generally pre-cleared of *E. coli* and phage antigens and used (generally following dilution, such as 1:200) in a serological expression screen.

The library is typically an expression library containing cDNAs from one or more tumors of the type that was implanted into SCID mice. This expression library may be prepared in any suitable vector, such as λ -screen (Novagen). cDNAs that encode a polypeptide that reacts with the antiserum may be identified using standard techniques, and

sequenced. Such cDNA molecules may be further characterized to evaluate expression in tumor and normal tissue, and to evaluate antigen secretion in patients.

The methods provided herein have advantages over other methods for tumor antigen discovery. In particular, all antigens identified by such methods should be secreted or released through necrosis of the tumor cells. Such antigens may be present on the surface of tumor cells for an amount of time sufficient to permit targeting and killing by the immune system, following vaccination.

METHODS FOR DETECTING CANCER

In general, a cancer may be detected in a patient based on the presence of one or more ovarian carcinoma proteins and/or polynucleotides encoding such proteins in a biological sample (such as blood, sera, urine and/or tumor biopsies) obtained from the patient. In other words, such proteins may be used as markers to indicate the presence or absence of a cancer such as ovarian cancer. In addition, such proteins may be useful for the detection of other cancers. The binding agents provided herein generally permit detection of the level of protein that binds to the agent in the biological sample. Polynucleotide primers and probes may be used to detect the level of mRNA encoding a tumor protein, which is also indicative of the presence or absence of a cancer. In general, an ovarian carcinoma-associated sequence should be present at a level that is at least three fold higher in tumor tissue than in normal tissue

There are a variety of assay formats known to those of ordinary skill in the art for using a binding agent to detect polypeptide markers in a sample. *See, e.g.,* Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988. In general, the presence or absence of a cancer in a patient may be determined by (a) contacting a biological sample obtained from a patient with a binding agent; (b) detecting in the sample a level of polypeptide that binds to the binding agent; and (c) comparing the level of polypeptide with a predetermined cut-off value.

In a preferred embodiment, the assay involves the use of binding agent immobilized on a solid support to bind to and remove the polypeptide from the remainder

of the sample. The bound polypeptide may then be detected using a detection reagent that contains a reporter group and specifically binds to the binding agent/polypeptide complex. Such detection reagents may comprise, for example, a binding agent that specifically binds to the polypeptide or an antibody or other agent that specifically binds to the binding agent, 5 such as an anti-immunoglobulin, protein G, protein A or a lectin. Alternatively, a competitive assay may be utilized, in which a polypeptide is labeled with a reporter group and allowed to bind to the immobilized binding agent after incubation of the binding agent with the sample. The extent to which components of the sample inhibit the binding of the labeled polypeptide to the binding agent is indicative of the reactivity of the sample with 10 the immobilized binding agent. Suitable polypeptides for use within such assays include full length ovarian carcinoma proteins and portions thereof to which the binding agent binds, as described above.

The solid support may be any material known to those of ordinary skill in the art to which the tumor protein may be attached. For example, the solid support may be 15 a test well in a microtiter plate or a nitrocellulose or other suitable membrane. Alternatively, the support may be a bead or disc, such as glass, fiberglass, latex or a plastic material such as polystyrene or polyvinylchloride. The support may also be a magnetic particle or a fiber optic sensor, such as those disclosed, for example, in U.S. Patent No. 5,359,681. The binding agent may be immobilized on the solid support using a variety 20 of techniques known to those of skill in the art, which are amply described in the patent and scientific literature. In the context of the present invention, the term "immobilization" refers to both noncovalent association, such as adsorption, and covalent attachment (which may be a direct linkage between the agent and functional groups on the support or may be a linkage by way of a cross-linking agent). Immobilization by adsorption to a well in a 25 microtiter plate or to a membrane is preferred. In such cases, adsorption may be achieved by contacting the binding agent, in a suitable buffer, with the solid support for a suitable amount of time. The contact time varies with temperature, but is typically between about 1 hour and about 1 day. In general, contacting a well of a plastic microtiter plate (such as polystyrene or polyvinylchloride) with an amount of binding agent ranging from about

10 ng to about 10 μ g, and preferably about 100 ng to about 1 μ g, is sufficient to immobilize an adequate amount of binding agent.

Covalent attachment of binding agent to a solid support may generally be achieved by first reacting the support with a bifunctional reagent that will react with both
 5 the support and a functional group, such as a hydroxyl or amino group, on the binding agent. For example, the binding agent may be covalently attached to supports having an appropriate polymer coating using benzoquinone or by condensation of an aldehyde group on the support with an amine and an active hydrogen on the binding partner (*see, e.g.*, Pierce Immunotechnology Catalog and Handbook, 1991, at A12-A13).

10 In certain embodiments, the assay is a two-antibody sandwich assay. This assay may be performed by first contacting an antibody that has been immobilized on a solid support, commonly the well of a microtiter plate, with the sample, such that polypeptides within the sample are allowed to bind to the immobilized antibody. Unbound sample is then removed from the immobilized polypeptide-antibody complexes and a
 15 detection reagent (preferably a second antibody capable of binding to a different site on the polypeptide) containing a reporter group is added. The amount of detection reagent that remains bound to the solid support is then determined using a method appropriate for the specific reporter group.

More specifically, once the antibody is immobilized on the support as
 20 described above, the remaining protein binding sites on the support are typically blocked. Any suitable blocking agent known to those of ordinary skill in the art, such as bovine serum albumin or Tween 20TM (Sigma Chemical Co., St. Louis, MO). The immobilized antibody is then incubated with the sample, and polypeptide is allowed to bind to the antibody. The sample may be diluted with a suitable diluent, such as phosphate-buffered
 25 saline (PBS) prior to incubation. In general, an appropriate contact time (*i.e.*, incubation time) is a period of time that is sufficient to detect the presence of polypeptide within a sample obtained from an individual with ovarian cancer. Preferably, the contact time is sufficient to achieve a level of binding that is at least about 95% of that achieved at equilibrium between bound and unbound polypeptide. Those of ordinary skill in the art

will recognize that the time necessary to achieve equilibrium may be readily determined by assaying the level of binding that occurs over a period of time. At room temperature, an incubation time of about 30 minutes is generally sufficient.

Unbound sample may then be removed by washing the solid support with an
 5 appropriate buffer, such as PBS containing 0.1% Tween 20™. The second antibody, which contains a reporter group, may then be added to the solid support. Preferred reporter groups include those groups recited above.

The detection reagent is then incubated with the immobilized antibody-polypeptide complex for an amount of time sufficient to detect the bound polypeptide. An
 10 appropriate amount of time may generally be determined by assaying the level of binding that occurs over a period of time. Unbound detection reagent is then removed and bound detection reagent is detected using the reporter group. The method employed for detecting the reporter group depends upon the nature of the reporter group. For radioactive groups, scintillation counting or autoradiographic methods are generally appropriate.
 15 Spectroscopic methods may be used to detect dyes, luminescent groups and fluorescent groups. Biotin may be detected using avidin, coupled to a different reporter group (commonly a radioactive or fluorescent group or an enzyme). Enzyme reporter groups may generally be detected by the addition of substrate (generally for a specific period of time), followed by spectroscopic or other analysis of the reaction products.

20 To determine the presence or absence of a cancer, such as ovarian cancer, the signal detected from the reporter group that remains bound to the solid support is generally compared to a signal that corresponds to a predetermined cut-off value. In one preferred embodiment, the cut-off value for the detection of a cancer is the average mean signal obtained when the immobilized antibody is incubated with samples from patients
 25 without the cancer. In general, a sample generating a signal that is three standard deviations above the predetermined cut-off value is considered positive for the cancer. In an alternate preferred embodiment, the cut-off value is determined using a Receiver Operator Curve, according to the method of Sackett et al., *Clinical Epidemiology: A Basic Science for Clinical Medicine*, Little Brown and Co., 1985, p. 106-7. Briefly, in this

embodiment, the cut-off value may be determined from a plot of pairs of true positive rates (*i.e.*, sensitivity) and false positive rates (100%-specificity) that correspond to each possible cut-off value for the diagnostic test result. The cut-off value on the plot that is the closest to the upper left-hand corner (*i.e.*, the value that encloses the largest area) is the most accurate cut-off value, and a sample generating a signal that is higher than the cut-off value determined by this method may be considered positive. Alternatively, the cut-off value may be shifted to the left along the plot, to minimize the false positive rate, or to the right, to minimize the false negative rate. In general, a sample generating a signal that is higher than the cut-off value determined by this method is considered positive for a cancer.

10 In a related embodiment, the assay is performed in a flow-through or strip test format, wherein the binding agent is immobilized on a membrane, such as nitrocellulose. In the flow-through test, polypeptides within the sample bind to the immobilized binding agent as the sample passes through the membrane. A second, labeled binding agent then binds to the binding agent-polypeptide complex as a solution containing
15 the second binding agent flows through the membrane. The detection of bound second binding agent may then be performed as described above. In the strip test format, one end of the membrane to which binding agent is bound is immersed in a solution containing the sample. The sample migrates along the membrane through a region containing second binding agent and to the area of immobilized binding agent. Concentration of second
20 binding agent at the area of immobilized antibody indicates the presence of a cancer. Typically, the concentration of second binding agent at that site generates a pattern, such as a line, that can be read visually. The absence of such a pattern indicates a negative result. In general, the amount of binding agent immobilized on the membrane is selected to generate a visually discernible pattern when the biological sample contains a level of
25 polypeptide that would be sufficient to generate a positive signal in the two-antibody sandwich assay, in the format discussed above. Preferred binding agents for use in such assays are antibodies and antigen-binding fragments thereof. Preferably, the amount of antibody immobilized on the membrane ranges from about 25 ng to about 1 μ g, and more

Of course, numerous other assay protocols exist that are suitable for use with the tumor proteins or binding agents of the present invention. The above descriptions are intended to be exemplary only. For example, it will be apparent to those of ordinary skill in the art that the above protocols may be readily modified to use ovarian carcinoma polypeptides to detect antibodies that bind to such polypeptides in a biological sample. The detection of such ovarian carcinoma protein specific antibodies may correlate with the presence of a cancer.

A cancer may also, or alternatively, be detected based on the presence of T cells that specifically react with an ovarian carcinoma protein in a biological sample. Within certain methods, a biological sample comprising CD4⁺ and/or CD8⁺ T cells isolated from a patient is incubated with an ovarian carcinoma protein, a polynucleotide encoding such a polypeptide and/or an APC that expresses at least an immunogenic portion of such a polypeptide, and the presence or absence of specific activation of the T cells is detected. Suitable biological samples include, but are not limited to, isolated T cells. For example, T cells may be isolated from a patient by routine techniques (such as by Ficoll/Hypaque density gradient centrifugation of peripheral blood lymphocytes). T cells may be incubated *in vitro* for 2-9 days (typically 4 days) at 37°C with an ovarian carcinoma protein (e.g., 5 - 25 µg/ml). It may be desirable to incubate another aliquot of a T cell sample in the absence of ovarian carcinoma protein to serve as a control. For CD4⁺ T cells, activation is preferably detected by evaluating proliferation of the T cells. For CD8⁺ T cells, activation is preferably detected by evaluating cytolytic activity. A level of proliferation that is at least two fold greater and/or a level of cytolytic activity that is at least 20% greater than in disease-free patients indicates the presence of a cancer in the patient.

44

derived from a biological sample, wherein at least one of the oligonucleotide primers is specific for (*i.e.*, hybridizes to) a polynucleotide encoding the ovarian carcinoma protein. The amplified cDNA is then separated and detected using techniques well known in the art, such as gel electrophoresis. Similarly, oligonucleotide probes that specifically hybridize to
5 a polynucleotide encoding an ovarian carcinoma protein may be used in a hybridization assay to detect the presence of polynucleotide encoding the tumor protein in a biological sample.

To permit hybridization under assay conditions, oligonucleotide primers and probes should comprise an oligonucleotide sequence that has at least about 60%, preferably
10 at least about 75% and more preferably at least about 90%, identity to a portion of a polynucleotide encoding an ovarian carcinoma protein that is at least 10 nucleotides, and preferably at least 20 nucleotides, in length. Preferably, oligonucleotide primers and/or probes hybridize to a polynucleotide encoding a polypeptide described herein under moderately stringent conditions, as defined above. Oligonucleotide primers and/or probes
15 which may be usefully employed in the diagnostic methods described herein preferably are at least 10-40 nucleotides in length. In a preferred embodiment, the oligonucleotide primers comprise at least 10 contiguous nucleotides, more preferably at least 15 contiguous nucleotides, of a DNA molecule having a sequence provided herein. Techniques for both PCR based assays and hybridization assays are well known in the art (*see*, for example,
20 Mullis et al., *Cold Spring Harbor Symp. Quant. Biol.*, 51:263, 1987; Erlich ed., *PCR Technology*, Stockton Press, NY, 1989).

One preferred assay employs RT-PCR, in which PCR is applied in conjunction with reverse transcription. Typically, RNA is extracted from a biological sample such as a biopsy tissue and is reverse transcribed to produce cDNA molecules.
25 PCR amplification using at least one specific primer generates a cDNA molecule, which may be separated and visualized using, for example, gel electrophoresis. Amplification may be performed on biological samples taken from a test patient and from an individual who is not afflicted with a cancer. The amplification reaction may be performed on several dilutions of cDNA spanning two orders of magnitude. A two-fold or greater increase in

expression in several dilutions of the test patient sample as compared to the same dilutions of the non-cancerous sample is typically considered positive.

In another embodiment, ovarian carcinoma proteins and polynucleotides encoding such proteins may be used as markers for monitoring the progression of cancer.

- 5 In this embodiment, assays as described above for the diagnosis of a cancer may be performed over time, and the change in the level of reactive polypeptide(s) evaluated. For example, the assays may be performed every 24-72 hours for a period of 6 months to 1 year, and thereafter performed as needed. In general, a cancer is progressing in those patients in whom the level of polypeptide detected by the binding agent increases over
- 10 time. In contrast, the cancer is not progressing when the level of reactive polypeptide either remains constant or decreases with time.

- Certain *in vivo* diagnostic assays may be performed directly on a tumor. One such assay involves contacting tumor cells with a binding agent. The bound binding agent may then be detected directly or indirectly via a reporter group. Such binding agents
- 15 may also be used in histological applications. Alternatively, polynucleotide probes may be used within such applications.

- As noted above, to improve sensitivity, multiple ovarian carcinoma protein markers may be assayed within a given sample. It will be apparent that binding agents specific for different proteins provided herein may be combined within a single assay.
- 20 Further, multiple primers or probes may be used concurrently. The selection of tumor protein markers may be based on routine experiments to determine combinations that results in optimal sensitivity. In addition, or alternatively, assays for tumor proteins provided herein may be combined with assays for other known tumor antigens.

25 DIAGNOSTIC KITS

The present invention further provides kits for use within any of the above diagnostic methods. Such kits typically comprise two or more components necessary for performing a diagnostic assay. Components may be compounds, reagents, containers and/or equipment. For example, one container within a kit may contain a monoclonal

antibody or fragment thereof that specifically binds to an ovarian carcinoma protein. Such antibodies or fragments may be provided attached to a support material, as described above. One or more additional containers may enclose elements, such as reagents or buffers, to be used in the assay. Such kits may also, or alternatively, contain a detection
5 reagent as described above that contains a reporter group suitable for direct or indirect detection of antibody binding.

Alternatively, a kit may be designed to detect the level of mRNA encoding an ovarian carcinoma protein in a biological sample. Such kits generally comprise at least one oligonucleotide probe or primer, as described above, that hybridizes to a
10 polynucleotide encoding an ovarian carcinoma protein. Such an oligonucleotide may be used, for example, within a PCR or hybridization assay. Additional components that may be present within such kits include a second oligonucleotide and/or a diagnostic reagent or container to facilitate the detection of a polynucleotide encoding an ovarian carcinoma protein.

15 The following Examples are offered by way of illustration and not by way of limitation.

EXAMPLES

Example 1Identification of Representative Ovarian Carcinoma Protein cDNAs

5

This Example illustrates the identification of cDNA molecules encoding ovarian carcinoma proteins.

Anti-SCID mouse sera (generated against sera from SCID mice carrying late passage ovarian carcinoma) was pre-cleared of E. coli and phage antigens and used at a
10 1:200 dilution in a serological expression screen. The library screened was made from a SCID-derived human ovarian tumor (OV9334) using a directional RH oligo(dT) priming cDNA library construction kit and the λ Screen vector (Novagen). A bacteriophage lambda screen was employed. Approximately 400,000 pfu of the amplified OV9334 library were screened.

15

196 positive clones were isolated. Certain sequences that appear to be novel are provided in Figures 1A-1S and SEQ ID NOs:1 to 71. Three complete insert sequences are shown in Figures 2A-2C (SEQ ID NOs:72 to 74). Other clones having known sequences are presented in Figures 15A-15EEE (SEQ ID NOs:82 to 310). Database searches identified the following sequences that were substantially identical to the
20 sequences presented in Figures 15A-15EEE.

These clones were further characterized using microarray technology to determine mRNA expression levels in a variety of tumor and normal tissues. Such analyses were performed using a Synteni (Palo Alto, CA) microarray, according to the manufacturer's instructions. PCR amplification products were arrayed on slides, with each
25 product occupying a unique location in the array. mRNA was extracted from the tissue sample to be tested, reverse transcribed and fluorescent-labeled cDNA probes were generated. The microarrays were probed with the labeled cDNA probes and the slides were scanned to measure fluorescence intensity. Data was analyzed using Synteni's provided GEMtools software. The results for one clone (13695, also referred to as O8E) are shown
30 in Figure 3.

Example 2

Identification of Ovarian Carcinoma cDNAs using Microarray Technology

5 This Example illustrates the identification of ovarian carcinoma polynucleotides by PCR subtraction and microarray analysis. Microarrays of cDNAs were analyzed for ovarian tumor-specific expression using a Synteni (Palo Alto, CA) microarray, according to the manufacturer's instructions (and essentially as described by Schena et al., *Proc. Natl. Acad. Sci. USA* 93:10614-10619, 1996 and Heller et al., *Proc. Natl. Acad. Sci.*
10 *USA* 94:2150-2155, 1997).

A PCR subtraction was performed using a tester comprising cDNA of four ovarian tumors (three of which were metastatic tumors) and a driver of cDNA from five normal tissues (adrenal gland, lung, pancreas, spleen and brain). cDNA fragments recovered from this subtraction were subjected to DNA microarray analysis where the
15 fragments were PCR amplified, adhered to chips and hybridized with fluorescently labeled probes derived from mRNAs of human ovarian tumors and a variety of normal human tissues. In this analysis, the slides were scanned and the fluorescence intensity was measured, and the data were analyzed using Synteni's GEMtools software. In general, sequences showing at least a 5-fold increase in expression in tumor cells (relative to normal
20 cells) were considered ovarian tumor antigens. The fluorescent results were analyzed and clones that displayed increased expression in ovarian tumors were further characterized by DNA sequencing and database searches to determine the novelty of the sequences.

Using such assays, an ovarian tumor antigen was identified that is a splice fusion between the human T-cell leukemia virus type I oncoprotein TAX (*see* Jin et al.,
25 *Cell* 93:81-91, 1998) and an extracellular matrix protein called osteonectin. A splice junction sequence exists at the fusion point. The sequence of this clone is presented in Figure 4 and SEQ ID NO:75. Osteonectin, unspliced and unaltered, was also identified from such assays independently.

Further clones identified by this method are referred to herein as 3f, 6b, 8e, 8h, 12c and 12h. Sequences of these clones are shown in Figures 5 to 9 and SEQ ID NOs:76 to 81. Microarray analyses were performed as described above, and are presented in Figures 10 to 14. A full length sequence encompassing clones 3f, 6b, 8e and 12h was
 5 obtained by screening an ovarian tumor (SCID-derived) cDNA library. This 2996 base pair sequence (designated O772P) is presented in SEQ ID NO:311, and the encoded 914 amino acid protein sequence is shown in SEQ ID NO:312. PSORT analysis indicates a Type 1a transmembrane protein localized to the plasma membrane.

In addition to certain of the sequences described above, this screen identified
 10 the following sequences:

Sequence	Comments
OV4vG11 (SEQ ID NO:313)	human clone 1119D9 on chromosome 20p12
OV4vB11 (SEQ ID NO:314)	human UWGC:y14c094 from chromosome 6p21
OV4vD9 (SEQ ID NO:315)	human clone 1049G16 chromosome 20q12-13.2
OV4vD5 (SEQ ID NO:316)	human KIAA0014 gene
OV4vC2 (SEQ ID NO:317)	human KIAA0084 gene
OV4vF3 (SEQ ID NO:318)	human chromosome 19 cosmid R31167
OV4VC1 (SEQ ID NO:319)	novel
OV4vH3 (SEQ ID NO:320)	novel
OV4vD2 (SEQ ID NO:321)	novel
O815P (SEQ ID NO:322)	novel
OV4vC12 (SEQ ID NO:323)	novel
OV4vA4 (SEQ ID NO:324)	novel
OV4vA3 (SEQ ID NO:325)	novel
OV4v2A5 (SEQ ID NO:326)	novel
O819P (SEQ ID NO:327)	novel
O818P (SEQ ID NO:328)	novel

Sequence	Comments
O817P (SEQ ID NO:329)	novel
O816P (SEQ ID NO:330)	novel
Ov4vC5 (SEQ ID NO:331)	novel
21721 (SEQ ID NO:332)	human lumican
21719 (SEQ ID NO:333)	human retinoic acid-binding protein II
21717 (SEQ ID NO:334)	human26S proteasome ATPase subunit
21654 (SEQ ID NO:335)	human copine I
21627 (SEQ ID NO:336)	human neuron specific gamma-2 enolase
21623 (SEQ ID NO:337)	human geranylgeranyl transferase II
21621 (SEQ ID NO:338)	human cyclin-dependent protein kinase
21616 (SEQ ID NO:339)	human prepro-megakaryocyte potentiating factor
21612 (SEQ ID NO:340)	human UPH1
21558 (SEQ ID NO:341)	human RalGDS-like 2 (RGL2)
21555 (SEQ ID NO:342)	human autoantigen P542
21548 (SEQ ID NO:343)	human actin-related protein (ARP2)
21462 (SEQ ID NO:344)	human huntingtin interacting protein
21441 (SEQ ID NO:345)	human 90K product (tumor associated antigen)
21439 (SEQ ID NO:346)	human guanine nucleotide regulator protein (tim1)
21438 (SEQ ID NO:347)	human Ku autoimmune (p70/p80) antigen
21237 (SEQ ID NO:348)	human S-laminin
21436 (SEQ ID NO:349)	human ribophorin I
21435 (SEQ ID NO:350)	human cytoplasmic chaperonin hTRiC5
21425 (SEQ ID NO:351)	humanEMX2
21423 (SEQ ID NO:352)	human p87/p89 gene
21419 (SEQ ID NO:353)	human HPBR11-7
21252 (SEQ ID NO:354)	human T1-227H
21251 (SEQ ID NO:355)	human cullin I

Sequence	Comments
21247 (SEQ ID NO:356)	kunitz type protease inhibitor (KOP)
21244-1 (SEQ ID NO:357)	human protein tyrosine phosphatase receptor F (PTPRF)
21718 (SEQ ID NO:358)	human LTR repeat
OV2-90 (SEQ ID NO:359)	novel
Human zinc finger (SEQ ID NO:360)	
Human polyA binding protein (SEQ ID NO:361)	
Human pleiotrophin (SEQ ID NO:362)	
Human PAC clone 278C19 (SEQ ID NO:363)	
Human LLRep3 (SEQ ID NO:364)	
Human Kunitz type protease inhib (SEQ ID NO:365)	
Human KIAA0106 gene (SEQ ID NO:366)	
Human keratin (SEQ ID NO:367)	
Human HIV-1TAR (SEQ ID NO:368)	
Human glia derived nexin (SEQ ID NO:369)	
Human fibronectin (SEQ ID NO:370)	
Human ECMproBM40 (SEQ ID NO:371)	
Human collagen (SEQ ID NO:372)	
Human alpha enolase (SEQ ID NO:373)	
Human aldolase (SEQ ID NO:374)	
Human transf growth factor BIG H3 (SEQ ID NO:375)	
Human SPARC osteonectin (SEQ ID NO:376)	
Human SLP1 leucocyte protease (SEQ ID NO:377)	
Human mitochondrial ATP synth (SEQ ID NO:378)	
Human DNA seq clone 461P17 (SEQ ID NO:379)	
Human dbpB pro Y box (SEQ ID NO:380)	
Human 40 kDa keratin (SEQ ID NO:381)	

Sequence	Comments
Human arginosuccinate synth (SEQ ID NO:382)	
Human acidic ribosomal phosphoprotein (SEQ ID NO:383)	
Human colon carcinoma laminin binding pro (SEQ ID NO:384)	

This screen further identified multiple forms of the clone O772P, referred to herein as 21013, 21003 and 21008. PSORT analysis indicates that 21003 (SEQ ID NO:386; translated as SEQ ID NO:389) and 21008 (SEQ ID NO:387; translated as SEQ ID NO:390) represent Type 1a transmembrane protein forms of O772P. 21013 (SEQ ID NO:385; translated as SEQ ID NO:388) appears to be a truncated form of the protein and is predicted by PSORT analysis to be a secreted protein.

Additional sequence analysis resulted in a full length clone for O8E (2627 bp, which agrees with the message size observed by Northern analysis; SEQ ID NO:391). This nucleotide sequence was obtained as follows: the original O8E sequence (OrigO8Econs) was found to overlap by 33 nucleotides with a sequence from an EST clone (IMAGE#1987589). This clone provided 1042 additional nucleotides upstream of the original O8E sequence. The link between the EST and O8E was confirmed by sequencing multiple PCR fragments generated from an ovary primary tumor library using primers to the unique EST and the O8E sequence (ESTxO8EPCR). Full length status was further indicated when anchored PCR from the ovary tumor library gave several clones (AnchoredPCR cons) that all terminated upstream of the putative start methionine, but failed to yield any additional sequence information. Figure 16 presents a diagram that illustrates the location of each partial sequence within the full length O8E sequence.

Two protein sequences may be translated from the full length O8E. For "a" (SEQ ID NO:393) begins with a putative start methionine. A second form "b" (SEQ ID NO:392) includes 27 additional upstream residues to the 5' end of the nucleotide sequence.

Example 3

This example discloses the identification and characterization of antibody epitopes recognized by the O8E polyclonal anti-sera.

Rabbit anti-sera was raised against E. coli derived O8E recombinant protein and tested for antibody epitope recognition against 20 or 21 mer peptides that correspond to the O8E amino acid sequence. Peptides spanning amino acid regions 31 to 65, 76 to 110, 136 to 200 and 226 to 245 of the full length O8E protein were recognized by an acid eluted peak and/or a salt eluted peak from affinity purified anti-O8E sera. Thus, the corresponding amino acid sequences of the above peptides constitute the antibody epitopes recognized by affinity purified anti-O8E antibodies.

For epitope mapping, 20 or 21 mer peptides corresponding to the O8E protein were synthesized. For antibody affinity purification, rabbit anti-O8E sera was run over an O8E-sepharose column, then antibody was eluted with a salt buffer containing 0.5 M NaCl and 20 mM PO₄, followed by an acid elution step using 0.2 M Glycine, pH 2.3. Purified antibody was neutralized by the addition of 1M Tris, pH 8 and buffer exchanged into phosphate buffered saline (PBS). For enzyme linked immunosorbant assay (ELISA) analysis, O8E peptides and O8E recombinant protein were coated onto 96 well flat bottom plates at 2 µg/ml for 2 hours at room temperature (RT). Plates were then washed 5 times with PBS + 0.1 % Tween 20 and blocked with PBS + 1 % bovine serum albumin (BSA) for 1 hour. Affinity purified anti-O8E antibody, either an acid or salt eluted fraction, was then added to the wells at 1 µg/ml and incubated at RT for 1 hr. Plates were again washed, followed by the addition of donkey anti-rabbit-Ig-horseradish peroxidase (HRP) antibody for 1 hour at RT. Plates were washed, then developed by the addition of the chromagenic substrate 3, 3', 5, 5'-tetramethylbenzidine (TMB) (described by Bos *et al.*, *J. of Immunoassay* 2:187-204 (1981); available from Sigma (St. Louis, MO)). The reaction was incubated 15 minutes at RT and then stopped by the addition of 1 N H₂SO₄. Plates were read at an optical density of 450 (OD450) in an automated plate reader. The sequences of peptides corresponding to the O8E antibody epitopes are disclosed herein as SEQ ID NOs:

394-415. Antibody epitopes recognized by the O8E polyclonal anti-sera are disclosed herein in Figure 17.

Example 4

5 This example discloses IHC analysis of O8E expression in ovarian cancer tissue samples.

For immunohistochemistry studies, paraffin-embedded formalin fixed ovarian cancer tissue was sliced into 8 micron sections. Steam heat induced epitope retrieval (SHIER) in 0.1 M sodium citrate buffer (pH 6.0) was used for optimal staining
10 conditions. Sections were incubated with 10% serum/PBS for 5 minutes. Primary antibody (anti-O8E rabbit affinity purified polyclonal antibody) was added to each section for 25 min followed by a 25 min incubation with an anti-rabbit biotinylated antibody. Endogenous peroxidase activity was blocked by three 1.5 min incubations with hydrogen peroxidase. The avidin biotin complex/horse radish peroxidase system was used along
15 with DAB chromogen to visualize antigen expression. Slides were counterstained with hematoxylin. One (papillary serous carcinoma) of six ovarian cancer tissue sections displayed O8E immunoreactivity. O8E expression was localized to the plasma membrane.

Six ovarian cancer tissues were analyzed with the anti-O8E rabbit polyclonal antibody. One (papillary serous carcinoma) of six ovarian cancer tissue samples
20 stained positive for O8E expression. O8E expression was localized to the surface membrane.

Example 5

25 This example discloses O8E peptides that are predicted to bind HLA-A2 and to be immunogenic for CD8 T cell responses in humans.

Potential HLA-A2 binding peptides of O8E were predicted by using the full-length open-reading frame (ORF) from O8E and running it through "Episeek," a program used to predict MHC binding peptides. The program used is based on the algorithm published by Parker, K.C. *et al.*, *J. Immunol.* 152(1):163-175 (1994) (incorporated by

reference herein in its entirety). 10-mer and 9-mer peptides predicted to bind HLA-0201 are disclosed herein as SEQ ID NOs: 416-435 and SEQ ID NOs: 436-455, respectively.

Example 6

5 This example discloses O8E cell surface expression measured by fluorescence activated cell sorting.

For FACS analysis, cells were washed with ice cold staining buffer (PBS/1% BSA/azide). Next, the cells were incubated for 30 minutes on ice with 10 micrograms/ml of affinity purified rabbit anti-B305D polyclonal antibody. The cells were
10 washed 3 times with staining buffer and then incubated with a 1:100 dilution of a goat anti-rabbit Ig (H+L)-FITC reagent (Southern Biotechnology) for 30 minutes on ice. Following 3 washes, the cells were resuspended in staining buffer containing prodium iodide, a vital stain that allows for identification of permeable cells, and analyzed by FACS. O8E surface expression was confirmed on SKBR3 breast cancer cells and HEK293
15 cells that stably overexpress the cDNA for O8E. Neither MB415 cells nor HEK293 cells stably transfected with a control irrelevant plasmid DNA showed surface expression of O8E (Figures 18 and 19).

Example 7

20 This example further evaluates the expression and surface localization of O8E.

For expression and purification of antigen used for immunization, O8E expressed in an E. coli recombinant expression system was grown overnight in LB Broth with the appropriate antibiotics at 37°C in a shaking incubator. The next morning, 10 ml of the overnight culture was added to 500 ml of 2x YT plus appropriate antibiotics in a 2L-
25 baffled Erlenmeyer flask. When the Optical Density (at 560 nanometers) of the culture reached 0.4-0.6 the cells were induced with IPTG (1 mM). 4 hours after induction with IPTG the cells were harvested by centrifugation. The cells were then washed with phosphate buffered saline and centrifuged again. The supernatant was discarded and the cells were either frozen for future use or immediately processed. Twenty milliliters of lysis

buffer was added to the cell pellets and vortexed. To break open the *E. coli* cells, this mixture was then run through the French Press at a pressure of 16,000 psi. The cells were then centrifuged again and the supernatant and pellet were checked by SDS-PAGE for the partitioning of the recombinant protein. For protein that localized to the cell pellet, the

5 pellet was resuspended in 10 mM Tris pH 8.0 , 1% CHAPS and the inclusion body pellet was washed and centrifuged again. This procedure was repeated twice more. The washed inclusion body pellet was solubilized with either 8 M urea or 6 M guanidine HCl containing 10 mM Tris pH 8.0 plus 10 mM imidazole. The solubilized protein was added to 5 ml of nickel-chelate resin (Qiagen) and incubated for 45 min to 1 hour at room

10 temperature with continuous agitation. After incubation, the resin and protein mixture were poured through a disposable column and the flow through was collected. The column was then washed with 10-20 column volumes of the solubilization buffer. The antigen was then eluted from the column using 8M urea, 10 mM tris pH 8.0 and 300 mM imidazole and collected in 3 ml fractions. A SDS-PAGE gel was run to determine which fractions to pool

15 for further purification. As a final purification step, a strong anion exchange resin such as Hi-Prep Q (Biorad) was equilibrated with the appropriate buffer and the pooled fractions from above were loaded onto the column. Each antigen was eluted off of the column with an increasing salt gradient. Fractions were collected as the column was run and another SDS-PAGE gel was run to determine which fractions from the column to pool. The pooled

20 fractions were dialyzed against 10 mM Tris pH 8.0. This material was then evaluated for acceptable purity as determined by SDS-PAGE or HPLC, concentration as determined by Lowry assay or Amino Acid Analysis, identity as determined by amino terminal protein sequence, and endotoxin level as determined by the Limulus (LAL) assay. The proteins were then vialled after filtration through a 0.22 micron filter and the antigens were frozen

25 until needed for immunization.

For generation of polyclonal anti-sera, 400 micrograms of each prostate antigen was combined with 100 micrograms of muramyldipeptide (MDP). Equal volume of Incomplete Freund's Adjuvant (IFA) was added and then mixed. Every four weeks animals were boosted with 100 micrograms of antigen mixed with an equal volume of IFA. Seven

days following each boost the animal was bled. Sera was generated by incubating the blood at 4°C for 12-24 hours followed by centrifugation.

For characterization of polyclonal antisera, 96 well plates were coated with antigen by incubating with 50 microliters (typically 1 microgram) at 4 C for 20 hrs. 250 microliters of BSA blocking buffer was added to the wells and incubated at RT for 2 hrs. Plates were washed 6 times with PBS/0.01% tween. Anti-O8E rabbit sera or affinity purified anti-O8e antibody was diluted in PBS. Fifty microliters of diluted antibody was added to each well and incubated at RT for 30 min. Plates were washed as described above before 50 microliters of goat anti-rabbit horse radish peroxidase (HRP) at a 1:10000 dilution was added and incubated at RT for 30 min. Plates were washed as described above and 100 microliters of TMB microwell Peroxidase Substrate was added to each well. Following a 15 minute incubation in the dark at room temperature the colorimetric reaction was stopped with 100 microliters of 1N H₂SO₄ and read immediately at 450 nm. All polyclonal antibodies showed immunoreactivity to the O8E antigen.

For recombinant expression in mammalian HEK293 cells, full length O8E cDNA was subcloned into the mammalian expression vectors pcDNA3.1+ and pCEP4 (Invitrogen) which were modified to contain His and FLAG epitope tags, respectively. These constructs were transfected into HEK293 cells (ATCC) using Fugene 6 reagent (Roche). Briefly, HEK293 cells were plated at a density of 100,000 cells/ml in DMEM (Gibco) containing 10% FBS (Hyclone) and grown overnight. The following day, 2 ul of Fugene6 was added to 100 ul of DMEM containing no FBS and incubated for 15 minutes at room temperature. The Fugene6/DMEM mixture was then added to 1ug of O8E/pCEP4 or O8E/pcDNA3.1 plasmid DNA and incubated for 15 minutes at room temperature. The Fugene/DNA mix was then added to the HEK293 cells and incubated for 48-72 hrs at 37°C with 7% CO₂. Cells were rinsed with PBS then collected and pelleted by centrifugation. For Western blot analysis, whole cell lysates were generated by incubating the cells in Triton-X100 containing lysis buffer for 30 minutes on ice. Lysates were then cleared by centrifugation at 10,000rpm for 5 minutes at 4 C. Samples were diluted with SDS-PAGE loading buffer containing beta-mercaptoethanol, then boiled for 10 minutes

prior to loading the SDS-PAGE gel. Protein was transferred to nitrocellulose and probed using anti-O8E rabbit polyclonal sera #2333L at a dilution of 1:750. The blot was revealed with a goat anti-rabbit Ig coupled to HRP followed by incubation in ECL substrate.

For FACS analysis, cells were washed further with ice cold staining buffer (PBS+1%BSA+Azide). Next, the cells were incubated for 30 minutes on ice with 10ug/ml of Protein A purified anti-O8E polyclonal sera. The cells were washed 3 times with staining buffer and then incubated with a 1:100 dilution of a goat anti-rabbit Ig(H+L)-FITC reagent (Southern Biotechnology) for 30 minutes on ice. Following 3 washes, the cells were resuspended in staining buffer containing Propidium Iodide (PI), a vital stain that allows for the identification of permeable cells, and analyzed by FACS.

From these experiments, the results of which are illustrated in Figures 20-21, O8E expression was detected on the surface of transfected HEK293 cells and SKBR3 cells by FACS analysis using rabbit anti-O8E sera. Expression was also detected in transfected HEK293 cell lysates by Western blot analysis (not shown).

From the foregoing it will be appreciated that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. Accordingly, the invention is not limited except as by the appended claims.

20

SUMMARY OF SEQUENCE LISTING

SEQ ID NOs:1-71 are ovarian carcinoma antigen polynucleotides shown in Figures 1A-1S.

SEQ ID NOs:72-74 are ovarian carcinoma antigen polynucleotides shown in Figures 2A-2C.

SEQ ID NO:75 is the ovarian carcinoma polynucleotide 3g (Figure 4).

SEQ ID NO:76 is the ovarian carcinoma polynucleotide 3f (Figure 5).

SEQ ID NO:77 is the ovarian carcinoma polynucleotide 6b (Figure 6).

SEQ ID NO:78 is the ovarian carcinoma polynucleotide 8e (Figure 7A).

CLAIMS

1. An isolated polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

- (a) polynucleotides recited in any one of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387 or 391; and
- (b) complements of the foregoing polynucleotides.

2. A polypeptide according to claim 1, wherein the polypeptide comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

- (a) polynucleotides recited in any one of 1-81, 313-331, 359, 366, 379, 385-387 or 391; and
- (b) complements of such polynucleotides.

3. An isolated polynucleotide encoding at least 5 amino acid residues of a polypeptide according to claim polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

- (a) polynucleotides recited in any one of SEQ ID NOs:1-81, 319-331, 359, 385-387 or 391; and
- (b) complements of the foregoing polynucleotides

4. A polynucleotide according to claim 3, wherein the polynucleotide encodes an immunogenic portion of the polypeptide.

5. A polynucleotide according to claim 3, wherein the polynucleotide comprises a sequence recited in any one of SEQ ID NOs:1-81, 319-331, 359, 385-387, 391 or a complement of any of the foregoing sequences.

6. An isolated polynucleotide complementary to a polynucleotide according to claim 3.

7. An expression vector comprising a polynucleotide according to claim 3 or claim 6.

8. A host cell transformed or transfected with an expression vector according to claim 7.

9. A pharmaceutical composition comprising a polypeptide according to claim 1, in combination with a physiologically acceptable carrier.

10. A pharmaceutical composition according to claim 9, wherein the polypeptide comprises an amino acid sequence encoded by a polynucleotide that comprises a sequence recited in any one of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387 or 391.

11. A vaccine comprising a polypeptide according to claim 1, in combination with a non-specific immune response enhancer.

12. A vaccine according to claim 11, wherein the polypeptide comprises an amino acid sequence encoded by a polynucleotide that comprises a sequence recited in any one of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387 or 391.

13. A pharmaceutical composition comprising:

(a) a polynucleotide encoding an ovarian carcinoma polypeptide, wherein the polypeptide comprises at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-81, 319-331, 359, 385-387 or 391; and

(ii) complements of the foregoing polynucleotides; and

(b) a physiologically acceptable carrier.

14. A pharmaceutical composition according to claim 13, wherein the polynucleotide comprises a sequence recited in any one of SEQ ID NOs:1-81, 319-331, 359, 385-387, 391 or a complement of any of the foregoing sequences.

15. A vaccine comprising:

(a) a polynucleotide encoding an ovarian carcinoma polypeptide, wherein the polypeptide comprises at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387 or 391; and

(ii) complements of the foregoing polynucleotides; and

16. A vaccine according to claim 15, wherein the polynucleotide comprises a sequence recited in any one of SEQ ID NOs:1-81, 319-331, 359, 385-387 or 391.

17. A pharmaceutical composition comprising:

(a) an antibody that specifically binds to an ovarian carcinoma protein, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-81, 313-331, 359, 366, 379, 385-387 or 391; and

(ii) complements of such polynucleotides; and

(b) a physiologically acceptable carrier.

18. A method for inhibiting the development of ovarian cancer in a patient, comprising administering to a patient an effective amount of an agent selected from the group consisting of:

(a) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

(ii) complements of such polynucleotides;

(b) a polynucleotide encoding a polypeptide as recited in (a); and

(c) an antibody that specifically binds to an ovarian carcinoma protein that comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;
and

(ii) complements of such polynucleotides;
and thereby inhibiting the development of ovarian cancer in the patient.

19. A method according to claim 18, wherein the agent is present within a pharmaceutical composition according to any one of claims 9, 13 or 17.

20. A method according to claim 18, wherein the agent is present within a vaccine according to any one of claims 11, 15 or 18.

21. A fusion protein comprising at least one polypeptide according to claim 1.

22. A polynucleotide encoding a fusion protein according to claim 21.

23. A pharmaceutical composition comprising a fusion protein according to claim 21 in combination with a physiologically acceptable carrier.

24. A vaccine comprising a fusion protein according to claim 21 in combination with a non-specific immune response enhancer.

25. A pharmaceutical composition comprising a polynucleotide according to claim 22 in combination with a physiologically acceptable carrier.

26. A vaccine comprising a polynucleotide according to claim 22 in combination with a non-specific immune response enhancer.

27. A method for inhibiting the development of ovarian cancer in a patient, comprising administering to a patient an effective amount of a pharmaceutical composition according to claim 23 or claim 25.

28. A method for inhibiting the development of ovarian cancer in a patient, comprising administering to a patient an effective amount of a vaccine according to claim 23 or claim 26.

29. A pharmaceutical composition, comprising:

(a) an antigen presenting cell that expresses an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

(ii) complements of such polynucleotides; and

(b) a pharmaceutically acceptable carrier or excipient.

30. A vaccine, comprising:

(a) an antigen presenting cell that expresses an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

- (ii) complements of such polynucleotides; and
- (b) a non-specific immune response enhancer.

31. A vaccine comprising:

(a) an anti-idiotypic antibody or antigen-binding fragment thereof that is specifically bound by an antibody that specifically binds to an ovarian carcinoma protein that comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;
and

- (ii) complements of such polynucleotides; and
- (b) non-specific immune response enhancer.

32. A vaccine according to claim 30 or claim 31, wherein the immune response enhancer is an adjuvant.

33. A pharmaceutical composition, comprising:

(a) a T cell that specifically reacts with an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;
and

- (ii) complements of such polynucleotides; and
- (b) a physiologically acceptable carrier.

34. A vaccine, comprising:

(a) a T cell that specifically reacts with an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

(ii) complements of such polynucleotides; and

(b) a non-specific immune response enhancer.

35. A method for inhibiting the development of ovarian cancer in a patient, comprising administering to the patient an effective amount of a pharmaceutical composition according to claim 29 or claim 33.

36. A method for inhibiting the development of ovarian cancer in a patient, comprising administering to the patient an effective amount of a vaccine according to any one of claims 30, 31 or 34.

37. A method for stimulating and/or expanding T cells, comprising contacting T cells with:

(a) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

- (ii) complements of such polynucleotides;
- (b) a polynucleotide encoding such a polypeptide; and/or
- (c) an antigen presenting cell that expresses such a polypeptide under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells.

38. A method according to claim 37, wherein the T cells are cloned prior to expansion.

39. A method for stimulating and/or expanding T cells in a mammal, comprising administering to a mammal a pharmaceutical composition comprising:

(a) one or more of:

(i) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

complements of such polynucleotides;

(ii) a polynucleotide encoding an ovarian carcinoma polypeptide; or

(iii) an antigen-presenting cell that expresses an ovarian carcinoma polypeptide; and

(b) a physiologically acceptable carrier or excipient;

and thereby stimulating and/or expanding T cells in a mammal.

40. A method for stimulating and/or expanding T cells in a mammal, comprising administering to a mammal a vaccine comprising:

(a) one or more of:

(i) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

complements of such polynucleotides;

(ii) a polynucleotide encoding an ovarian carcinoma polypeptide; or

(iii) an antigen-presenting cell that expresses an ovarian carcinoma polypeptide; and

(b) a non-specific immune response enhancer;

and thereby stimulating and/or expanding T cells in a mammal.

41. A method for inhibiting the development of ovarian cancer in a patient, comprising administering to a patient T cells prepared according to the method of claim 39 or claim 40.

42. A method for inhibiting the development of ovarian cancer in a patient, comprising the steps of:

(a) incubating CD4⁺ T cells isolated from a patient with one or more of:

(i) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian

carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

complements of such polynucleotides;

(ii) a polynucleotide encoding an ovarian carcinoma polypeptide; or

(iii) an antigen-presenting cell that expresses an ovarian carcinoma polypeptide;

such that T cells proliferate; and

(b) administering to the patient an effective amount of the proliferated T cells, and therefrom inhibiting the development of ovarian cancer in the patient.

43. A method for inhibiting the development of ovarian cancer in a patient, comprising the steps of:

(a) incubating CD4⁺ T cells isolated from a patient with one or more of:

(i) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

complements of such polynucleotides;

(ii) a polynucleotide encoding an ovarian carcinoma polypeptide; or

(iii) an antigen-presenting cell that expresses an ovarian carcinoma polypeptide;

such that T cells proliferate;

- (b) cloning one or more proliferated cells; and
- (c) administering to the patient an effective amount of the cloned T cells.

44. A method for inhibiting the development of ovarian cancer in a patient, comprising the steps of:

- (a) incubating CD8⁺ T cells isolated from a patient with one or more of:

- (i) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

- polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

- complements of such polynucleotides;

- (ii) a polynucleotide encoding an ovarian carcinoma polypeptide; or

- (iii) an antigen-presenting cell that expresses an ovarian carcinoma polypeptide;

such that T cells proliferate; and

- (b) administering to the patient an effective amount of the proliferated T cells, and therefrom inhibiting the development of ovarian cancer in the patient.

45. A method for inhibiting the development of ovarian cancer in a patient, comprising the steps of:

- (a) incubating CD8⁺ T cells isolated from a patient with one or more of:

- (i) an ovarian carcinoma polypeptide comprising at least an immunogenic portion of an ovarian carcinoma protein or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to

react with antigen-specific antisera is not substantially diminished, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

complements of such polynucleotides;

(ii) a polynucleotide encoding an ovarian carcinoma polypeptide; or

(iii) an antigen-presenting cell that expresses an ovarian carcinoma

polypeptide;

such that the T cells proliferate;

(b) cloning one or more proliferated cells ; and

(c) administering to the patient an effective amount of the cloned T cells.

46. A method for identifying a secreted tumor antigen, comprising the steps

of:

(a) implanting tumor cells in an immunodeficient mammal;

(b) obtaining serum from the immunodeficient mammal after a time sufficient

to permit secretion of tumor antigens into the serum;

(c) immunizing an immunocompetent mammal with the serum;

(d) obtaining antiserum from the immunocompetent mammal; and

(e) screening a tumor expression library with the antiserum, and therefrom

identifying a secreted tumor antigen.

47. A method according to claim 46, wherein the immunodeficient mammal is

a SCID mouse and wherein the immunocompetent mammal is an immunocompetent mouse.

48. A method for identifying a secreted ovarian carcinoma antigen,

comprising the steps of:

09636301.001000

- (a) implanting ovarian carcinoma cells in a SCID mouse;
- (b) obtaining serum from the SCID mouse after a time sufficient to permit secretion of ovarian carcinoma antigens into the serum;
- (c) immunizing an immunocompetent mouse with the serum;
- (d) obtaining antiserum from the immunocompetent mouse; and
- (e) screening an ovarian carcinoma expression library with the antiserum, and therefrom identifying a secreted ovarian carcinoma antigen.

49. A method for determining the presence or absence of a cancer in a patient, comprising the steps of:

(a) contacting a biological sample obtained from a patient with a binding agent that binds to an ovarian carcinoma protein, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

(ii) complements of the foregoing polynucleotides;

(b) detecting in the sample an amount of polypeptide that binds to the binding agent; and

(c) comparing the amount of polypeptide to a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient.

50. A method according to claim 49, wherein the binding agent is an antibody.

51. A method according to claim 50, wherein the antibody is a monoclonal antibody.

52. A method according to claim 49, wherein the cancer is ovarian cancer.

53. A method for monitoring the progression of a cancer in a patient, comprising the steps of:

(a) contacting a biological sample obtained from a patient at a first point in time with a binding agent that binds to an ovarian carcinoma protein, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

(ii) complements of the foregoing polynucleotides;

(b) detecting in the sample an amount of polypeptide that binds to the binding agent;

(c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and

(d) comparing the amount of polypeptide detected in step (c) to the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

54. A method according to claim 53, wherein the binding agent is an antibody.

55. A method according to claim 54, wherein the antibody is a monoclonal antibody.

56. A method according to claim 53, wherein the cancer is ovarian cancer.

57. A method for determining the presence or absence of a cancer in a patient, comprising the steps of:

(a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes an ovarian carcinoma protein, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

(ii) complements of the foregoing polynucleotides;

(b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide; and

(c) comparing the amount of polynucleotide that hybridizes to the oligonucleotide to a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient.

58. A method according to claim 57, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a polymerase chain reaction.

59. A method according to claim 57, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a hybridization assay.

60. A method for monitoring the progression of a cancer in a patient, comprising the steps of:

(a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes an ovarian carcinoma protein, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

(ii) complements of the foregoing polynucleotides;

(b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide;

(c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and

(d) comparing the amount of polynucleotide detected in step (c) to the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

61. A method according to claim 60, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a polymerase chain reaction.

62. A method according to claim 60, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a hybridization assay.

63. A diagnostic kit, comprising:

(a) one or more antibodies or antigen-binding fragments thereof that specifically bind to an ovarian carcinoma protein that comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

(ii) complements of the foregoing polynucleotides.; and

(b) a detection reagent comprising a reporter group.

64. A kit according to claim 63, wherein the antibodies are immobilized on a solid support.

65. A kit according to claim 63, wherein the solid support comprises nitrocellulose, latex or a plastic material.

66. A kit according to claim 63, wherein the detection reagent comprises an anti-immunoglobulin, protein G, protein A or lectin.

67. A kit according to claim 63, wherein the reporter group is selected from the group consisting of radioisotopes, fluorescent groups, luminescent groups, enzymes, biotin and dye particles.

68. A diagnostic kit, comprising:

(a) an oligonucleotide comprising 10 to 40 nucleotides that hybridize under moderately stringent conditions to a polynucleotide that encodes an ovarian carcinoma protein, wherein the ovarian carcinoma protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs:1-387 or 391;

and

(ii) complements of the foregoing polynucleotides; and

(b) a diagnostic reagent for use in a polymerase chain reaction or hybridization assay.

69. An ovarian carcinoma polypeptide, comprising the sequence of O8E as depicted by SEQ ID NO: 392.

70. An ovarian carcinoma polypeptide, comprising the sequence of O8E as depicted by SEQ ID NO: 393.

71. An antibody epitope of O8E wherein said antibody epitope is selected from the group consisting of SEQ ID NO: 394-414 and 415.

Variable	Mean	SD	Min	Max
Age (years)	34.5	10.2	18	65
Gender (Male/Female)	15/15	0	0	30
Marital status (Married/Single)	10/10	0	0	20
Education (High school/College/Postgraduate)	10/10/0	0	0	20
Occupation (Student/Teacher/Other)	10/10/0	0	0	20
Religious affiliation (Muslim/Hindu/Other)	10/10/0	0	0	20
Family size (Number of children)	2.5	1.5	0	6
Income (Monthly income in INR)	15000	5000	5000	30000
Health status (Healthy/Unhealthy)	15/5	0	0	20
Smoking status (Smoker/Non-smoker)	5/15	0	0	20
Alcohol consumption (Regular/Occasional/None)	5/10/5	0	0	20
Exercise frequency (Daily/Weekly/Monthly/None)	5/10/5/0	0	0	20
Stress level (Low/Medium/High)	5/10/5	0	0	20
Life satisfaction (Satisfied/Dissatisfied)	10/10	0	0	20
Overall health score (0-100)	75	15	50	100

ABSTRACT OF THE DISCLOSURE

Compositions and methods for the therapy and diagnosis of cancer, such as ovarian cancer, are disclosed. Compositions may comprise one or more ovarian carcinoma proteins, immunogenic portions thereof, polynucleotides that encode such portions or antibodies or immune system cells specific for such proteins. Such compositions may be used, for example, for the prevention and treatment of diseases such as ovarian cancer. Methods are further provided for identifying tumor antigens that are secreted from ovarian carcinomas and/or other tumors. Polypeptides and polynucleotides as provided herein may further be used for the diagnosis and monitoring of ovarian cancer.

WPN\corixa\210121\462c4\462c4-app.doc

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Docket No. : 210121.462C4
Date : August 10, 2000

DECLARATION

I, Monica Steinborn, in accordance with 37 C.F.R. § 1.821(f) do hereby declare that, to the best of my knowledge, the content of the paper entitled "Sequence Listing" and the computer readable copy contained within the floppy disk are the same.

Dated this 10th day of August, 2000.

Monica Steinborn
Legal Assistant

Wpn/210121 – Corixa/462c4/Seq/462c4dec.doc

11729.1 contg

TTAGAGAGGCACAGAAGGAAGAAGAGTTAAAAGCAGCAAAGCCGGGTTTTTTGTTTTGT
TTTTTTTTTTTTTTTTGAGATGGAGTCTCACTCTGTTGCCCAAGCTGGAGTACAACGGCA
TGATCTCAGCTCGCTGCAACCTCCGCTCCACGTTCAAGTGATTCTCCTGCCTCAGCCTCC
CAAGTAGCTGGGATTACAGGCGCCCGCCACCACGCTCAGCTAATTTTTTTGTATTTTAGT
AGAGACAGGGTTTACCAGGTTGGCCAGGCTGCTCTTGAACCTCCTGACCTCAGGTGATCCA
CCCCTCGGCTCCCAAAGTGCTGGGATTACAGGCGTGAGCCACCACGCCCCGGCCCCCAA
AGCTGTTTCTTTTGTCTTTAGCGTAAAGCTCTCCTGCCATGCAGTATCTACATAACTGACGT
GACTGCCAGCAAGCTCAGTCACTCCGTGGTC

11729-45.21.21.cons1

TAGGATGTGTTGGACCCTCTGTGTCAAAAAAACCTCACAAAGAATCCCCTGCTCATTACA
GAAGAAGATGCATTTAAAAATATGGGTTATTTCAACTTTTTATCTGAGGACAAGTATCCAT
TAATTATTGTGTGAGAAGAGATTGAATACCTGCTTAAGAAGCTTACAGAAGCTATGGGAG
GAGGTGGCAGCAAGAACAATTTGAACATTATAAAATCAACTTTGATGACAGTAAAAATG
GCCTTTCTGTCATGGGAACCTATTGAGCTTATTGGAAATGGACAGTTTAGCAAAGGCATGGA
CCGGCAGACTGTGTCTATGGCAATTAATGAAGTCTTTAATGAACCTATATTAGATGTGTTA
AAGCAGGGTTACATGATGAAAAAGGGCCACAGACGGAAAAACTGGACTGAAAGATGGTT
TGTAATAAACCCCAACATAATTTCTTACTATGTGAGTGAGGATCTGAAGGATAAGAAAGG
AGACATTCTCTTGGATGAAAAATCTGTGTAGAGTCCTTGCCCTGACAAAGATGGAAA

11729-45.21.21.cons2

TTAGAGAGGCACAGAAGGAAGAAGAGTTAAAAGCAGCAAAGCCGGGTTTTTTGTTTTGT
TTTTTTTTTTTTTTTTGAGATGGAGTCTCACTCTGTTGCCCAAGCTGGAGTACAACGGCA
TGATCTCAGCTCGCTGCAACCTCCGCTCCACGTTCAAGTGATTCTCCTGCCTCAGCCTCC
CAAGTAGCTGGGATTACAGGCGCCCGCCACCACGCTCAGCTAATTTTTTTGTATTTTAGT
AGAGACAGGGTTTACCAGGTTGGCCAGGCTGCTCTTGAACCTCCTGACCTCAGGTGATCCA
CCCCCTCGGCTCCCAAAGTGCTGGGATTACAGGCGTGAGCCACCACGCCCCGGCCCCCAA
AGCTGTTTCTTTTGTCTTTAGCGTAAAGCTCTCCTGCCATGCAGTATCTACATAACTGACGT
GACTGCCAGCAAGCTCAGTCACTCCGTGGTC

11731.1contig

TCTTTTCTTTTCGATTTCTTCAATTTGTCACGTTTGATTTTATGAAGTTGTTCAAGGGCTAA
CTGCTGTGTAATATAGCTTTCTCTGAGTTCTTCAAGTATGTTAAATGAATCCATTCTG
AGAGCTTAGATGCAGTTTCTTTTCAAGAGCATCTAATTTGTTCTTTAAGTCTTTGGCATAAT
TCTTCTTTTCTGATGACTTTTATGAAGTAACTGATCCCTGAATCAGGTGTGTTACTGAG
CTGCATGTTTTTAATTTCTTTCTTAAATAGCTGCTTCTCAGGGACCAGATAGATAAGCTTAT
TTTGATATTCTTTAAGCTCTTTGTTGAAGTTGTTTCAATTTCCATAATTTCCAGGTTCACACTGT
TTATCCAAAACCTTCTAGCTCAGTCTTTTGTGTTTGTCTTTCTGATTTGGACATCTTGTAGTCTG
CTTACATCTGCTGATGXTTCCATTCAGTCTTCCAGTTCCAGGTGGAGACTTTCCTTTCT
GGAGCTCAGCCTGACAAATGCCCTTCTGXTCCCT

FIG. 1A

000780" 1009E960

11731.2contig

AGCCAGATGGCTGAGAGCTGCAAGAAGAAGTCAGGATCATGATGGCTCAGTTTCCACAG
CGATGAATGGAGGGCCAAATATGTGGGCTATTACATCTGAAGAACGTAAGCATGATA
AACAGTTTGATAACCTCAAACCTTCAGGAGGTTACATAACAGGTGATCAAGCCCGTACTTT
TTTCCTACAGTCAGGTCTGCCGGCCCCGGTTTAGCTGAAATATGGGCTTATCAGATCTG
AACAAGGATGGGAAGATGGACCAGCAAGAGTTCTCTATAGCTATGAAACTCATCAAGTTA
AAGTTGCAGGGCCAACAGCTGCCTGTAGTCTCCCTCCTATCATGAAACAACCCCTATGT
TCTCTCCACTAATCTCTGCTCGTTTTGGGATGGGAAGCATGCCAATCTGTCCATTATCAG
CCATTGCCTCCAGTTGCACCTATAGCAACACCCCTTGTCTTCTGCTACTTCAGGGACCAGTAT
TCCTCCCTAATGATGCCTGCTCCCTAGTGCCTTCTGTTAGTA

11734.1contig

AATAGATTTAATGCAGAGTGTCAACTTCAAITGATTGATAGTGGCTGCCTAGAGTGCTGTG
TTGAGTAGGTTTTCTGAGGATGCACCCCTGGCTTGAAGAGAAAGACTGGCAGGATTAACAAT
ATCTAAAATCTCACTTGTAGGAGAAACCACAGGCCACCAGAGCTGCCACTGGTGCTGGCAC
CAGCTCCACCAAGGCCAGCGAAGAGCCCAATGTGAGAGTGGCGGTGAGGCTGGCACCAG
CACTGAAGCCACCCTGGTCTGGCACTGGCACTGGCACTGTTATTGGTACTGGTACTGGC
ACCAGTGCTGGCACTGCCACTCTCTGGGCTTTGGCTTTAGCTTCTGCTCCCGCTGGATCC
GGGCTTTGGCCAGGGTCCGATATCAGCTTCGTCCCAAGTTCAGGGCCCGGCAGCATTCTC
CGAGCCGAGCCCAATGCCCAATTCGAGCTTAATCTCGGCCCTAGCCTTGGCTTCAGCTGCA
GCCTCAGCTGCAGCCTTCAAATCCGCTTCCATCGCCTCTCGGTAC

11734.2contig

GCCAAGAAAGCCCCAAAGCTGAAGCATCTGCATGGGGAAGAGGATGGCAGCAGTGATCA
GAGTCAGGCTTCTGGAACCACAGGTGGCCGAAGGGTCTCAAAGGCCCTAATGCCCTCAAT
GGCCCCGAGGGCTTCAAGGGGTCCCATAGCCTTTTGGGCCCCGAGGGCATCAAGGACTCG
GTTGGCTGCTTGGGCCCCGAGAGCCTTCTCTCCCTGAGATCACCTAAAGCCCGTAGGGCC
AAGGCTCGCCGTAGAGCTGCCAAGCTCCAGTCAATCCCAAGAGCCTGAAGCACCACCACCT
CGGGATGTGGCCCTTTTGAAGGGAGGGCAATGATTTGGTGAAGTACCTTTTGGCTAAAG
ACCAGACGAAGATTCCCATCAAGCGCTGGGACATGCTGAAGGACATCATCAAAGAATACA
CTGATGTGTACCCCGAAATCATTCGAAGCAGCAGGCTATTCTTGGAGAAGGTATTTGGGAT
TCAATTGAAGGAAATTGATAAGAAATGACCACCTGTACATTCTCTCAGC

11736.1contig

GAGGTCTCACTATGTTGCCCAGGCTGTCTTGAACCTCTGGGATCAAGCAATCCACCCATG
TTGGTCTCCAAAAGTGCTGGGATCATAGGGCTGAGCCACCTCAGCCAGCCACCAATTTTCA
ATCAGGAAGACTTTTTCTTCTTCAAGAAGTGAAGGGTTTCCAGAGTATAGCTACACTATT
GCTTGCCTGAGGGTGACTACAAAATGCTTGGCTAAAAGGTTAGGATGGGTAAAGAATTAG
ATTTTCTGAATGCAAAAAATAAATGTGAACCTAATGAACCTTAGGTAATACATATTCATAAA
ATAATTATTCACATATTCCTGATTTATCACAGAAATAATGTATGAAATGCTTTGAGTTTCT
TGGAGTAAACTCCATTACTCATCCCAAGAAACCATATTATAAGTATCACTGATAATAAGAA
CAACAGGACCTTGTCTATAAATCTGGATAAGAGAAATAGTCTCTGGGTGTTTGTCTTAAT
TGATAAAATTTACTTGTCCATCTTTTAGTTCAGAATCACAAAA

FIG. 1B

11736.2contig

AAGCGGAAATGAGAAAGGAGGGAAAATCATGTGGTATTGAGCGGAAAACCTGCTGGATGA
 CAGGGCTCAGTCCTGTTGGAGAACTCTGGGTGGTGTGTAGAACAGGGCCACTCACAGTG
 GGGTGACAGACCAGCACGGCTCTGTGACCTGTTTGTACAGGTCCATGATGAGGTAAAC
 AATACACTGAGTATAAGGGTTGGTTTAGAACTCTTACAGCAATTTGACAAAGTAATCTTC
 TGTGCAGTGAATCTAAGAAAAAATTGGGGCTGTATTTGTATGTTCTTTTTTTCATTCAT
 GTTCTGAGTTACCTATTTTTATTGCATTTTACAAAAGCATCCTTCCATGAAGGACCGGAAGT
 TAAAAACAAAGCAGGTCTTTATCACAGCACTGTCTGTAGAACACAGTTCAGAGTTATCCAC
 CCAAGGAGCCAGGGAGCTGGGCTAAACCAAGAATTTTGCTTTTGGTTAATCATCAGGTA
 CTTGAGTTGGAATTGTTTTAATCCCATCATTACCAGGCTGGAXGTG

11739-1&2

CCGCGGCTCCTGTCCAGACCCTGACCCTCCCTCCCAAGGCTCAACCGTCCCCCAACAACCG
 CCAGCCTTGTAAGTGTGCGGCTGCGAGAGCCTGTGCTTAAGTAAGAATCAGGCCTTATTG
 GAGACATTCAAGCAAAGGTTGGACA.AACTACTTTTCCAGAACAGAAAGGAACTCATGCAT
 CAGAAAAGGTGACTAATAAAGGTACCAGAAGAATATGGCTGCACAAATACCAGAATCTGA
 TCAGATAAAACAGTTTAAGCAATTTCTGGGGACCTACAATAAACTTACAGAGACCTGCTTT
 TTGGACTGTGTTAGAGACTTCACAACAAGAGAAGTAAAACCTGAAGAGACCACCTGTTCA
 GAACATTGCTTACAGAAATATTTAAAAATGACACAAAGAATATCCATGAGATTTAGGAA
 TATCATATTACAGCAGAAATGAAGCCCTGCCAGCCAAAGCAGGACTCCTTGGCCAACCCAG
 TAGAGAAGTCTGTATGATGAACCTTTGATGAAAGATTGCCAACAGCTGCTTTATTGGA
 TGAGGACTCATCTGATAGAATCCCTGAAAGCAGTAGCCACCATGTTCAACCATCTGTAT
 GACTGTTTGGCAAAATGGAACCCCTGGAGAAACAAAATTGCTATTTACCAGGAATAATCA
 CAATAGAAGGTCTTATTGTTCACTGAAATAATAAGATGCAACATTGTTGAGGCCTTATGA
 TTCAGCAGCTTGGTCACTTGATTAGAAAAATAAACCAATGTTTCTCAATTGTGACTGTIA
 ATTTTAAAGCAACTTATGTCTTCGATCATGTATGAGATAGAAAAATTTTTATTACTCAAAG
 TAAAAATAAATGGA

11740.1.contig

GAAAAAAATATAAAACACACTTTTGGCAAAACGGTGGCCCTAAAAGAGCGAAAAGAATTT
 CACCAATATAAATCCAAATTTATGAAAACCTGACAATTTAATCCAAGAATCACTTTTGTAAA
 TGAAGCTAGCAAGTGATGATATGATAAAAAATAACGTGGAGGAAATAAAAAACACAAGACTT
 GGCATAAGATATATCCACTTTTGATA.TTAACTTGTGAAGCATATTCTTCGACAAATTGTG
 AAAGCGTTCCTGATCTTGCTTGTCTCCA.TTCAAATAAGGAGGCATATCACATCCCAAGA
 GTAACAGAAAAAGAAAAAGACATTTTGCATTTTGAGATGAACCAAAAGACACAAAACAA
 AACGAACAAAGTGTCATGTCTAATCTAGCCTCTGAAATAAACCTTGAACATCTCCTACAA
 GGCACCGTGATTTTGTAA.TTCAACCTGAAGAAATGTGATGACTTTTGTGGACATGAAAA
 TCAGATGAGAAAACCTGTGGTCTTTCCAAACCCCTGAACTCCCTGAAAACCTTTGCA

FIG. 1C

11766.1.contig

CTGGGATCATTTCTCTTGATGTCATAAAAGACTCTTCTTCTCCTCTTCATCCTCTTCTTCAT
CCTCTTCTGTACAGTGCTGCCGGGTACAACGGCTATCTTTGTCTTTATCCTGAGATGAAGAT
GATGCTTCTGTTTCTCCTACCATAACTGAAGAAATTTGCTGGAAGTCGTTTGAAGTGGCTGT
TTCTCTGACTTCACCTTCTTTGTCAAACCTGAGTCTTTTACCTCATGCCCTCAGCTTCCAC
AGCATCTTCATCTGGATGTTTATTTTCAAAGGGCTCACTGAGGAACTTCTGATTGAGAG
GTGGAAGAGTCACTGTGATTTTCTCCTCATTTTGTGCAAATTTGCCTCTTTGCTGTCTGT
GCTCTCAGGCAACCCATTTGTTGTCAATGGGGGCTGACAAAGAAACCTTTGGTTCGATTAAGT
GGCCTGGGTGTCCAGGCCCAATTTATATTAGACCTCTCAGTATAGCTTGGTGAATTTCCAG
GAAACATAACACCATTCAATCGATTTAACTATTGGAATTGGTTTT

11766.2.contig

GAGGGTTGGTGGTAGCGGCTTGGGGAGGTGCTCGCTCTGTGGTCTTGCTCTCTCCACGC
TTCCCCGGCTCCCTTCGTTTCCCCCCCCCGTCCGCTGCGTGCCGGAGTGTGTGCGAGGG
AGGGGGAGGGCGTCCGGGGGGTGGGGGGAGGCGTTCGGTCCCCAAGAGACCCGCGGAG
GGAGGCGGAGGCTGTGAGGGACTCCCGGAAGCCATGGACGTCGAGAGGCTCCAGGAGGC
GCTGAAAGATTTTGAGAAAGAGGGGGAAGGAAGTTTGTCTGTCTGCTGGATCAGTTTCT
TTGTCAATGAGCAAGACTGGAGAAACAATGATTCAGTGGTCCCAATTTAAAGGCTATTTT
ATTTTCAAACCTGGAGAAAGTGAATGGATGATTCAGAACTTCAGCTCCTGAGCCAAGAGGT
CTCCCAACCTAATGTGCA

11773.2.contig

AAGCAGGCGGCTCCCGCGCTCGCAGGGCGCTGCCACCTGCCCGCCCGCCGCTCGCTCGCT
CGCCCGCGCGCGCGCTGCCGACCGCCAGCATGCTCCCGAGAGTGGGCTGCCCGCGCT
GCCGXTGCCG

11775-1&2

ATCTCTTGATGCCAAATATTTAATATAAATCTTTGAAACAAGTTCAGATGAAATAAAAAAT
CAAAGTTTGCAAAAACGTGAAGATTAACCTTAATTGTCAAATATTCCTCATGCCCCAAATC
AGTATTTTTTTTATTTCTATGCAAAAGTATGCCTTCAAACCTGCTTAAATGATATATGATATG
ATACACAAACCAGTTTTCAAATAGTAAAGCCAGTCATCTTGCAATTGTAAGAAATAGGTA
AAAGATATAAGACACCTTACACACACACACACACACACACAGTGTGCACGCCAATGAC
AAAAACAATTTGGCCTCTCCTAAAAAAGAACATGAAGACCCTTAATTGCTGCCAGGAG
GGAACACTGTGTACCCCTCCCTACAATCCAGCTAGTTTCTTTAATCCAATAGCAAATCT
GGGCATATTTGAGAGGAGTGATTTCTGACAGCCACGTTGAAATCCTGTGGGGAACCAATTCAT
GTCCACCCACTGGTGGCCTGAAAAAATCCCAATAATTTTCCGCTCCCACTTCTGCTGTGTC
TCTTCCACATCCTCACATAGACCCAGACCCGCTGGCCCTGGCTGGGCATCGCATTTGCTG
GTAGAGCAAGTCATAGGTCTCGTCTTTGACGTCACAGAAGCGATACACCAAATTCCTGGT
CGGTCAATGTGATAACCAGAGA

FIG. 1D

11777.1&2.cons

CAGACGGGGTTTCACTATGTTGGCTAGCCTGGTCTTGAACCTCTGACTTCAGGTGATCTGC
CTGCCTTGGCCTCCCAAAGTGCTGGGATTACAGGCATAAGCCACTGCGCCCGGTGATCTG
ATGGTTTCATAAGGCTTTTCCCCCTTTTGTCTAGCACTTCTCTTCTGCGCCATGTGAAG
AAGGACATGTTTGTCTCCCTTCCACCACGATTGTAAGTTGTTTCTGAGGCCTCCCCGGCC
ATGCTGAACTGTGAGTCAATTAACCTCTTTCTTTATAAATTATCCAGTTTTGGGTATGTC
TTTATTAGTAGAATGAGAACAGACTAATAACAACCTTAAAGGAGACTGACGGAGAGGATT
CTTCTGGATCCCAGCACTTCTCTGAATGCTACTGACATTCTTCTTGAGGACTTTAAACTG
GGAGATAGAAAACAGATTCCATGGCTCAGCAGCCTGAGAGCAGGGAGGGAGCCAAAGCTA
TAGATGACATGGGCAGCCTCCCCTGAGGCCAGGTGTGGCCGAACCTGGGCAGTGTCTGCAC
CCACCCACCAGGGCCAAGTCTCTGTCTTGGAGAGCCAAGCCTCAATCACTGCTAGCCTCA
AGTGTCCCAAGCCACAGTGGCTAGGGGGACTCAGGGAACAGTTCCAGTCTGCCCTACTT
CTCTTACCTTTACCCCTCATACCTCCAAAGTAGACCATGTTTATGAGGTCCAAAGG

=

11779.2.contig

AAGCGAGGAAGCCACTGCGGCTCCTGGCTGAAAACGGCGGCCAGGCTCGGGAACAGAGG
GAACCGGAAGAACAGGACCGGAAGCTGCAGGCTGAAAGGGACAAGCGAATGCGAGAGG
AGCAGCTGCGCCGGGAGGCTGAACCCGGGCTGAACGTGAGGCCGAGGCGCGGAGACGG
GAGGAGCAGGAGGCTCGAGACAAGCCCGCAGCCTGAGCAGGAGGAGCAGGAGCGACTGCA
GAAGCAGAAAGAGGAAGCCGAAGCCCGGCTCCCGGGAAGAAGCTGACCGCCAGCGCCAGG
AGCGGGAAAAGCACTTTTCAGAAAGGACGAACAGGAGAGACAAGAGCGAAGAAAGCGGCTG
GAGGAGATAATGAAGAGGACTCGGAAATCACAACCCCGCCGAACCAAGAAGCAGGATGC
AAAGGAGACCGCAGCTAACAAATTCGGGCCCAGACCTTTGTGAAAGCTGTAGAGACTCGGC
CCTCTGGGCTTCCAGAAAGGATTCTATTGCAGAAAGGAAGGAGCTXGGCCCCCAXGGA

11781 & 37.cons

CTCTGTGGAAAACATGATGAGGAATGAATTTACCATTACCCATGTTCTCATCCCCAAGCAAA
GTGCTGGGTCTGATTACTGCAACACAGAGAAGGAAGAAGAACTTTTCTCATACAGGATC
AGCAGGGCCTCATCACTGCGGCTGGATTCTACTACCCACACAGACCGCGTTTCTCTC
CAGTGTGACCTACACACTCACTGCTTACCAGATGATGTTGCCAGAGTCAGTAGCCATT
GTTTGTCCCCCAAGTTCCAGGAAGCTGGATTCTTTAAACTAACTGACCATGGACTAGAGG
AGATTTCTTCTGTGCGCCAGAAAGGATTTTATCCACACACCAAGGATCCACCTCTGTTCTG
TAGCTGCAGCCACGTGACTGTTGTGGACAGAGCAGTGACCATCACAGACCTTCGATGAGC
GTTTGAGTCCAACACCTTCCAAGAACAAACAAACCATAATCAGTGTACTGTAGCCCCCTTAAT
TTAAGCTTTCTAGAAAGCTTTGGAAGTTTTGTAGATAGTAGAAAGGGGGGCATCACXTGA
GAAAGAGCTGATTTTGTATTTTCAAGTTTGAAGAAATAACTGAACATATTTTTAGGCAA
GTCAGAAAGAGAACATGGTCACCCAAAAGCAACTGTAATCAGAAATTAAGTTACTCAGA
AATTAAGTAGCTCAGAAAATAAGAAACAATGGTATAATGAACCCCCATAACCCCTTCTTC
TGGATTACCAAATTGTTAACATTTTTTCTCTCACCTATCCTTCTAATTTCTCTAATTTT
AATTTGTTTATATTTACCTCTGGGCTCAATAAGGGCATCTGTCCAGAAATTTGGAAGCCAT
TTAGAAAATCTTTTGAATTTTCTGTGCTTTATGGCAATATGAATGGAGCTTATTACTGGG
GTGAGGGACAGCTTACTCCATTTGACCAGATTTTGGCTAACACATCCCGAAGAATGATT
TTGTCAGGAATTATTTTATTTAATAAATAATTCAGGATATTTTTCTCTACAATAAAGTAA
CAAT

FIG. 1E

11781-76-87-37

CTCTGTGGAAAAGTATGAGGAATGAATTTACCATTACCCATGTTCTCATCCCCAAGCAAA
GTGCTGGGTCTGATTACTGCAACACAGAGAACGAAGAAGAACTTTTCTCATACAGGATC
AGCAGGGCCTCATCACACTGGGCTGGATTTCATACTACCCACACAGACCGGTTTCTCTC
CAGTGTGACCTACACACTCACTGCTTTACCAGATGATGTTGCCAGAGTCAGTAGCCATT
GTTTGTCCCCCAAGTTCCAGGAACTGGATTCTTTAACTAACTGACCATGGACTAGAGG
AGATTTCTTCTGTGCGCCAGAAAGGATTTTCATCCACACAGCAAGGATCCACCTCTGTTCTG
TAGCTGCAGCCACGTGACTGTTGTGGACAGAGCAGTGACCATCACAGACCTTCGATGAGC
GTTTGTGAGTCCAACACCTTCCAAGAACAACAAAACCATATCAGTGTACTGTAGCCCCCTTAAT
TTAAGCTTTCTAGAAAGCTTTGGAAGTTTTGTAGATAGTAGAAAGGGGGGCATCACCTGA
GAAAGAGCTGATTTTGTATTTTCAAGTTTTGAAAAGAAATAACTGAACATATTTTTTAGGCAA
GTCAGAAAGAGAACATGGTCACCCAAAAGCAACTGTAACCTCAGAAATTAAGTTACTCAGA
AATTAAGTAGCTCAGAAATTAAGAAAGAATGGTATAATGAACCCCATATACCCTTCCTTC
TGGATTCACCAATTGTTAACATTTTTCTCTCAGCTATCCTTCTAATTTCTCTCTAATTTT
AATTTGTTTATATTTACCTCTGGGCTCAATAAGGGCATCTGTGCAGAAATTTGGAAGCCAT
TTAGAAAATCTTTTGGATTTTCTGTGGTTTATGGCAATATGAATGGAGCTTATTACTGGG
GTGAGGGACAGCTTACTCCATTTGACCAGATTGTTTGGCTAACACATCCCGAAGAATGATT
TTGTCAGGAATTATTGTTATTTAATAAATATTTTCTCTACAATAAAGTAA
CAATTA

11784-1 & 2

GGACGACAAGGCCATGGCGATATCGGATCCGAATTCAGCCCTTTGGAATTAAATAAACCT
GGAACAGGGAAGGTGAAAGTTGGAGTGAGTCTTCCATATCTATACCTTTGTGCACAGT
TGAATGGGAAGTGTGCTTTAGGGCATCTTACAGATTGATTGATGGAAAAAGCAGACAG
GAACTGGTGGGAGGTCAAGTGGGGAAGTTGGTGAATGTGGAATAACTTACCTTTGTGCTC
CACTTAAACCAGATGTGTTCCAGCTTTCTGACATGCAAGGATCTACTTTAATTCCACT
CTCATTAAATAAATTGAATAAAAGCGAATGTTTTGGCACCTGATATAATCTGCCAGGCTATG
TGACAGTAGGAAGGAATGGTTCCCTTAAACAAGCCCAATGCACTGGTCTGACTTTATAAAT
TATTTAATAAAATGAACATAATC

11785.2.contig

GGCAGTGACATTCACCATCATGGGAACCACTTCCCTTTTCTCAGGATTCTCTGTAGTGG
AAGAGAGCACCCAGTGTGGGCTGAAAACATCTGAAAGTAGGGAGAAGAACCTAAAATA
ATCAGTATCTCAGAGGCTCTAAGGTCCCAAGAAGTCTCACTGGACATTTAAGTGCCAAC
AAAGGCATACTTTCCGAATCGCCAAAGTCAAACTTTCTAACTTCTGTCTCTCTCAGAGACA
AGTGAGACTCAAGAGTCTACTGCTTGTAGTGCAACTACAGAAAAGTGGTGTACCCAGAA
AAACAGGAGCAATTAGAAATGGTTCCAAATATTTCAAAGCTCCGCAACAGGATGTGCTTT
CCTTTGCCCAATTAGGGTTCTCTCTTTCTTTCTTTATTAACCACT

FIG. 1F

TGCGCTGAAAACAACGGCCTCCTTTACTGTTAAAAATGCAGCCACAGGTGCTTAGCCGTGGG
 CATCTCAACCACCAGCCTCTGTGGGGGGCAGGTGGGCGTCCCTGTGGGCCTCTGGGCCCAC
 GTCCAGCCTCTGTCTCTGCCTTCCGTTCTTCGACAGTGTTCGCGCATCCCTGGTCACTTG
 GTACTTGGCGTGGGCCCTCCTGTGCTGCTCCAGCAGCTCCTCCAGGXGGTCGGCCCCGCTTCA
 CCGCAGCCTCATGTTGTGTCCGGAGGCTGCTACGGCCTCCTCCTTCCTCGCGAGGGCTGT
 CTTACCCCTCCGGXGCACCTCCTCCAGCTCCAGCTGCTGGCGGGCCTGCAGCGTGGCCAGC
 TCGGCCTTGGCCTGCCGCGTCTCCTCCTCARAGGCTGCCAGCCGGTCTCGAACTCCTGGC
 GGATCACCTGGGCCAGGTTGCTGCGCTCGCTAGAAAGCTGCTCGTTCACCGCCTGCGCATC
 CTCCAGCGCCCCGCTCCTTCTGCCGCACAAGGCCCTGCAGACGCAGATTCTCGCCCTCGGCCT
 CCCCAGCTGGCCCTTACGCTCCGAGCACCGCTCCTGAAGCTTCCGCTCCGACTGCTCCAG
 CTCGGAGAGCTCGGCCTCGTACTTGTCCCGTAAGCGCTTGATGCGGCTCTCGGCAGCCTTC
 TCACTCTCCTCCTTGGCCAGCGCCATGTGGCCCTCCAGCCGGTGAATGACCAGCTCAATCT
 CTTGTCCCGGCTTTCGGATTCTTCCCTCAGCTCCTGTTCGCGGTTCCAGCAGCCACGCC
 TCCTCCTTCTGGTGGCGCCGGCCTCCCACGCTGCTCTCCAGCTCCAGCTGCTGCTTCAG
 GGTATTCAGCTCCATCTGGCGGGCCTCCAGCGTGGCCA

13690.4

CAACTTATTACTTGAAATTATAATATAGCCTGTCCGTTTGCTGTTTCCAGGCTGTGATATAT
 TTTCTAGTGGTTTGACTTTAAAAATAAATAAGGTTTAAATTTCTCCCC

13693.1

TGCAAGTCACGGGAGTTTATTTATTTAAATTTTCCCCACATGGAGACTCTGTGCCCCAGG
 CTGGAGTGCAATGGTGTGATCTTGGCTCACTGCAACCTCCACCTCCTGGGTTCAAGCGATT
 CTCCTGCCACAGCCTCCCGAGTAGCTGGGATTACAGGTGCCCCGCCACCACACCCAGCTAAT
 TTTTATTTTTAGTAAAGACAGGTTTCCCCATGTTGGCCAGGCTGGTCTTGAACCTTCTGA
 CCTCAGGTGATCCACCTGGCTCGGCTCCGAAAGTGTGGGATTACAGGCGTGAGCTACCC
 GTGCCTGCCCCAGCCACTGGAGTTTAAAGGACAGTCAATGTTGGCTCCAGCCTAAGGCGGCA
 TTTTCCCCCATCAGAAAGCCCGCGGCTCTGTACCTCAAAATAGGGCACCTGTAAAGTCAG
 TCAGTGAAGTCTCTGCTCTAACTGGCCACCCGGGCCCCATTGGCCTCTGACACAGCCTTGCC
 AGGANGCCTGCATCTGCCAAAAGAAAAGTTCACTTCTCTTCCG

13694.1

CAGAGAATCTKAGAAAGATGTCCCTTTCTTTTAAATGAATCAGAGAAGCCCATTTGTATC
 CCTGAATCATTGAGAAAAGCGCGGGTGGCGACAGCGCGGACCTAGGGATCGATCTGGAG
 GGACTTGGGGAGCGTGCAGAGACCTCTAGCTCGAGCGGAGGGACCTCCCGCCGGGATGC
 CTGGGGACCAGATGGACCTACTGGAAGTCAGTTGGATTACAGATTTCTCTCAGCAAGATAC
 TCTTGGCTGATAATTGAAGATTCTCAGCCTGAAAGCCAGGTTCTAGAGGATGATTCTGGT
 TCTCACTTCAGTATGCTATCTCGACACCTTCTCTAATCTCCAGACGCACAAAGAAAATCCTG
 TGTGGATGTTGNGTCCAATCCTTGAACAAACAGCTGGAGAAGAACGAGGAGACCGGTAA
 TAGTGGGTTCAATGAACATTTGAAAACAAAACCAGTTGCAGACCTG

FIG. 1G

13694.2

GACTGTCTGAACAAGGGACCTCTGACCAGAGAGCTGCAGGAGATGCAGAGTGGTGGCAG
GAGTGGAAAGCCAAAGAACACCCACCTTCTCCCTTGAAGGAGTAGAGCAACCATCAGAAG
ATACTGTTTTATTGCTCTGGTCAAACAAGTCTTCTGAGTTGACAAAACCTCAGGCTCTGGT
GACTTCTGAATCTGCAGTCCACTTTCCATAAGTTCTTGTGCAGACAACTGTTCTTTTGCTTC
CATAGCAGCAACAGATGCTTTGGGGCTAAAAGGCATGTCCTCTGACCTTGCAGGTGGTGG
ATTTTGCTCTTTTACAACATGTACATCCTTACTGGGCTGTGCTGTCACAGGGATGTCCTTGC
TGGACTGTTCTGCTATGGGGATACTTCGTTGGACTGTTCTTCATGCTTAATTGCAGTATTA
GCATCCACATCAGACAGCCTGGTATAACCAGAGTTGGTGGTTACTGATTGTAGCTGCTCTT
TGCCACTTCATATGGCACAAGTATTTCTCAACATCCTGGCTCTGGGAAG

13695.1

GAAATGTATATTTAATCATTCTCTTGAACGATCAGAACTCTRAAATCAGTTTTCTATAACAR
CATGTAATACAGTCACCGTGGCTCCAAGGTCCAGGAAGGCAGTGGTTAACACATGAAGAG
TGTGGGAAGGGGGCTGGAACAAAGTATTCTTTCTTCAAAGCTTCATTCTCAAGGCCT
CAATTCAAGCAGTCATTGTCTTGTCTTCAAAGTCTGTGTGTGCTTCATGGAAGGTATAT
GTTTGTTCCTTAATTTGAATTTGGGCCAGGAAGGGTCTGGAGATCTAAATTCAGAGTAAG
AAAACCTGAGCTAGAACTCAGGCATTCTCTTACAGAACTTGGCTTGCAGGGTAGAATGA
ANGGAAAGAACTTAGAAGCTCAACAAGCTGAAGATAATCCCATCAGGCATTTCCTCATAG
GCCTTGCAACTCTGTTCACTGAGAGATGTTATCCTG

13695.2

AGTCTGGAGTGAGCAAACAAGGCAACAACAARRAGAAGCCAAAAGCAGAAGGCTCCA
ATATGAACAAGATAAATCTATCTTCAAAGACATATTAGAAGTTGGGAAAATAATTCAATGT
GAACTAGACAAGTGTCTTAAAGAGTCATAAGTAAAATGCACGTGGAGACAAGTGCAATCCCC
AGATCTCAGGGACCTCCCCCTGGCTGCTACCTGGGGAGTGAGAGGACAGGATAGTGCAATG
TTCTTTGTCTCTGAATTTTATGTTATATGCTCTGTAATGTTGCTCTGAGGAAGCCCCCTGGAA
AGTCTATCCCAACATATCCAGATCTTATAATCCACAAATTAAGCTGTAGTATGTACCCTAA
GACGCTGCTAATTGACTGCCACTTCCCAACTCAGGGGCGGCTGCATTTTAGTAATGGGTCA
AATGATTCACTTTTTATGATGCTTCCCAAGGTGCCTTGGCTTCTCTCCCAACTGACAAATG
CCCAAGTTGACAAAATGATCATAATTTAGCATAAACCGAGCAATCGGGGACCCC

13697.1

TAGCTGTCTTCTCACTCTTATGGCAATGACCCCATATCTTAATGGATTAAGATAATGAAA
GTGATATTTCTTACACTCTGTATCTATCACCAGAAAGCTGAGGTGATAGCCCGCTTGTCAATTGT
CATCCATATTCTGGGACTCAGCGGGGAACCTTCTGGAATATTGCCAGGGACCATGGCAGA
GGGGCACAGTGCAATCTGGGGGAATGCACATTGGCTCAGCCTGGGTAAATGAGTGATATAC
ATTACCTCTGTTCACTCAATTTGGCCAGCACCAGTCACAAGGCCCCACCAAAATACCAGAG
CGCAAGAAATGTAGTCTGTGATATGCTTTTCTGTGTGTTCCCAACCCAAATCTCATCTTGA
ATTGTAAGCTCCCATAAATCCCATGTGTTGTGGGAGGGACCTGGTG

FIG. 1H

0953501.031000

13697.2

ATCATGAGGATGTTACCAAAGGGATGGTACTAAACCAATTTGTATTGCTCTGTTTTACACT
GCTTTGAAGATACTACCTGAGACTGGGTAATTTATAAAACAAAAGAGATTTAATTGACTCAC
AGTTCTGCAATGGCTGAAGAGGCTCAGGAACTTACAGTCATGGTGGAAGGCAAAGGAGG
AGCAAGGCATGTCTTACATGTAGTAGGAGAGAGAGCGAGAGCAGGAGAACCTGCCACTT
ATAAACCAATTCAGATCTCATAACTCCCTATCATGAGAAAAACATGGAGGAAACCACCCTC
ATGATCCAATCACCTCCCGCCAGGTCCTCCCTCGACACGTGGGGATTATAATTGAGGATT
AGAGGGACACAGAGACAAACCATATCATCAITTCATGAGAAATCCACCCTCATAGTCCAAT
CAGCTCCTACCAGGCCCCACCTCCAACACTGGGGATTGCAATTCAACATGAGATTGGGATG
GGGACACAGATTCAAACCATATCATAC

13699.1&2

CATGGCCTTTCTCCTTAGAGGCCAGAGGTGCTGCCCTGGCTGGGAGTGAAGCTCCAGGCAC
TACCAGCTTTCTGATTTTCCCGTTTGGTCCATGTGAAGAGCTACCACGAGCCCCAGCCTCA
CAGTGTCACCTCAAGGGCAGCTTGGTCTCTTGTCTGCGAGAGGCAGGCTGGTGTGACCCT
GGGAACCTTGACCCGGGAACAACAGGTGGCCAGAGTGAGTGTGGCCTGGCCCTCAACCT
AGTGTCCGTCTCTCTCTCTCTGACCCAGTCTTGAGTTAAAGGCCATTAAGTGTAGATA
CAAGCTCCTTGTGGCTGGAAAAACACCCCTCTGCTGATAAAGCTCAGGGGGCACTGAGGA
AGCAGAGGCCCTTGGGGGTGCCCTCCTGAAGAGAGCGTCAGGCCATCAGCTCTGTCCCTC
TGGTGTCTCCACGTCTGTCTCTCACCCTCCATCTCTGGGAGCAGCTGCACCTGACTGGCCAC
GCGGGGGCAGTGGAGGCACAGGCTCAGGCTGGCCGGGCTACCTGGCACCCCTATGGCTTAC
AAAGTAGACTTGGCCCACTTCTCTCCACCTGAGGGGAGCAGTCTGACTCCTAACAGTCTT
CCTTGGCCTGCCATCATCTGGGGTGGCTGGCTGTCAAGAAAGGCCGGGCAAGCTTTCTAAA
CACAGCCACAGGAGCTTGTAGCCCATCTTCCAGGTGGGGAAACAGTCTTAGATAAGTAA
GGTCACTTGCCTAACCCCTCCAGCACCTTGTCTTGGAGTCTCACAGCAGACTGCATGT
SAACAACCTGGAACCGAAAACATGCCCTCAGTATAAAA

13703.3

CCAGAACCTCCTTCTCTTTCCAGAAATCCCGAGGCCCTTGGAGACACAGAGGGTTTCACCT
TGGATGACCTCTAGAGAAAATGCCCAAGAACCCACCTTCTGGTCCCAACCTGCAGACCCC
ACAGCAGTCAGTTGGTCAGCCCTCTCTAGAAAGTCACTTGGCTCCATTGGCTGCTTCCA
ACCAATGGGCAGGAGAGAAAGGCTTTATTTCTGCCCCACCCATTCTCCTGTACCAGCACCT
CCGTTTTCACTCAGYGTGTCCAGCAACGGTACCGTTTACACAGTCA

13705.1

TGCATGTAGTTTATTTATCTCTTTSGTCTGGAAAACCAAGTGTCCCAGCAGCATGACTGA
ACATCACTCACTTCCCTACTTGATCTACAAGGCCAACGCCGAGAGCCCAGACCAGGATTG
CAAACACACTCCACGAGAAATTTGTGGATCCCGCTGTCAGGTAAGTGTCCGTCACTGACCCA
RACGCTGTTACGTGGCACATGACTGTACAGTGCCACGTAACAGCAGTGTACTTTTCTCCCA
TGAACAGTTACCTGCCATGTATCTACATGATTGAGAACAATTTGAACAGTTAATTCTGACA
CTTGAATAATCCCATCAAAAACCGTAAATCACTTTGATGTTTGTAAACGACAACATAGCAT
CACTTTACGACAGAAATCATCTGGAAAAACAGAAACGAATACATACATCTTAAAAAATG
CTGGGGTGGGCCAGGCACAGCTTCAAGCTGTAAATCCAGCACTTTGGGAGGCTTAAGCG
GGTG

FIG. 11

13705.2

TGGGGCGGAAAGAAGCCAAGGCCAAGGAGCTGGTGGCGGCAGCTGCAGCTGGAGGCCGAG
GAGCAGAGGAAGCAGAAGAAGCGGCAGAGTGTGTGGGGCCTGCACAGATACCTTCACTTG
CTGGATGGAAATGAAAATTACCCGTGTCTTGTGGATGCAGACGGTGATGTGATTTCTTCC
CACCAATAACCAACAGTGAGAAGACAAAGGTTAAGAAAACGACTTCTGATTTGTTTTGG
AAGTAACAAGTGCCACCAGTCTGCAGATTTGCAAGGATGTCATGGATGCCCTCATTCTGAA
AATGGCAAGAAATGAAAAAGTACACTTTAGAAAATAAAGAGGAAGGATCACTCTCAGAT
ACTGAAGCCGATGCAGTCTCTGGACAACCTCCAGATCCCACAACGAATCCCAGTGCTGGA
AAGGACGGGCCCTTCTTCTGGTGGTGGAAACANGTCCCGGTGGTGGATCTTGAANGGAA
CCTGAANGTGGTGTACCCCGTCCAAGGCCGACCTTGGCCAC

13707.4
=

TCCCGCGCTCGCAGGGCNCGTGCCACCTGCCYGTCCGCCCGCTCGCTCGCTCGCCCGCCG
GCCGCGCTGCCGACCGYCAGCATGCTGCCGAGAGTGGGCTGCCCGCGCTGCCGCTGCCG
CCGCCCGCGCTGCTGCCGCTGCTGCCGCTGCTGCTGCTGC

13708.1&2

GGCGGGTAGGCATGGAACTGAGAACAAAGGAAGCTTTCAGACTACGTGGGGAAGAAT
GAAAAAACCAAAATTATCGCCAAAGATTAGCAAAACGGGACAGGGAGCTCCAGCCCGAGA
GCCTATTATTAGCAGTGAGGAGCAGAAGCAGCTGATGCTGTACTATCACAGAAGACAAGA
GGAGCTCAAGAGATTGGAAGAAATGATGATGATGCCTATTTAACTCACCATGGGCGGA
TAACACTGCTTTGAAAACACATTTTCATGGAGTGAAAGACATAAAGTGGAGACCAAGATG
AAGTTCACCACCTGATGACACTTCCAAAGAGATTAGCTCACCT

13709.1

TCTGAAGGTTAAATGTTTCATCTAAATAGCGGATAATGRTAAACACCTATAGCATAGAGTTG
TTTGAGATTAATGAGATAATACATCTAAAATTATGTGCCTGGCATACAGCAAGATTGTTG
TTGTTGTGATGATGATGATGATGATGATAATATTTTTCTATCCCCAGTGACAACTGCTTG
AACCTATTAGATAATCAATACATGTTCTTCAACTGAGATCAATTTCCCCATGTTGTCTGAC
TGATGAAGCCCTACATTTTCTCTAGAGGAGATGACATTTGAGCAAGATCTTAAAGAAAAT
CAGATGCCTTCACCTGACCACTGCTTGGTGATCCCATGGCACTTTGTACATCTCTCCATTAG
CTCTCATCTCACCAGCCCATCATTATTGTATGTGCTGCCTTCTGAAGCTTGCAGCTGGCTAC
CATCMGGTAGAATAAAAATCATCTTTTCATAAAAATAGTGACCCTCCTTTTTATTGCAATT
CCCAAAGCCAAGCACCGTGGGANGGTAG

FIG. 1J

13709.2

TATGAAGAAGGGAAAAGAAGATAATTTGTGAAAGAAATGGGTCCAGTTACTAGTCTTTGA
AAAGGGTCAGTCTGTAGCTCTTCTTAATGAGAATAGGCAGCTTTCAGTTGCTCAGGGTCAG
ATTTCCCTTAGTGGTGTATCTAATCACAGGAAACATCTGTGGTTCCTCCAGTCTCTTTCTGG
GGGACTTGGGCCCCACTTCTCATTTCAATTAATTAGAGGAAATAGAACTCAAAGTACAATTT
ACTGTTGTTTAAACAATGCCACAAAGACATGGTTGGGAGCTATTTCTTGATTTGTGTAATAAT
GCTGTTTTTGTGTGCTCATAATGGTTCCAAAAATTTGGGTGCTGGCCAAAGAGAGATACTGT
TACAGAAGCCAGCAAGAAGACCTCTGTTCAATTCACACCCCCGGGGATATCAGGAATTGAC
TCCAGTGTGTGCAAATCCAGTTTGGCCTATCTTCT

13712.1&2

TGAGGGACTGATTGGTTTTGCTCTCTGCTATTEAATTCCCCAAGCCCACTTGTTCTGTCAGCG
TCCTCCTTCTCATTCCTTTTAGTTGTACCTCTCTTTCATCTGAGACCTTTCCTTCTTGATGT
CGCCTTTTCTTCTTCTGCTTTTTCTGATGTTCTGCTCAGCATGTTCTGGGTGCTTCTCATCT
GCATCATTCCTTTCAGATGCTGTAGCTTCTTCTCTCTTCTGCTCCTTTTCTTTTCTTTT
TTTTGGGGGGGCTTGTCTCTGACTCCAGTTGAGGGGCCCCAGGGTCTGGCCTTTTGAGACG
AGCCAGGAAGGCCTGCTCCTGGGCTCTAGCCGAGCAAGCTTGGCCTTCAATTGTGATCCCA
AGACGGGCAGCCTTGTGTGCTGTTGGCCCTCACAGGCTTGGAGCAGCATCTCATCAGTCA
GAATCTTTGGGGACTTGGACCCCTGGTTGTGCTCATCACTGCAGCTCTCCAAGTCTTTGTTT
GGCTTCTCTCCACCTGAAGTCAAATGTAGCCATCTTCACAACTTCTGATACAGCAAGTTGG
GCTTGGGATCATTATAACGGGTGGTCTCTTACAAAAGGCTCCTTATCTGTACTCCATCCTG
CCCAGTTTCCACTACCAAGTTGCCCCAGTCTTGTGAAAGAGCTCATTCCACCAGTGGTTT
GTGAACTCCTTGGCAGGCTCATGTCTACCCCATGAGTGTCTTCTTCAAGYTCCACCCTGA
GAGCCTGAGTGATACCAATCTCTCTCCG

13714.1&2

GACAACATGAAATAAATCCTAGAGGACAAAATTAAGTCAATAGAGTGTAGTCTAGTTAA
AAACTCGAAAAATGAGCAAGTCTGGTGGGAGTGGAGGAAGGGCTATACTATAAATCCAAG
TGGCCCTCCTGATCTTAACAAGCCATGCTCATTAACACATCTCTGAAGTGGACATACCAC
CTTTACGCAGGAAACAGGGCTTGGAACTTCTAAGGGAATTAACATGCACCACCCACATC
TAACCTACCTGCCCCGTAGGTACCATCCCTGCTTGGCTGAAATCAGTGCTC

13716.1&2

TTGGAATTAATAAATCCTGGAACAGGCAAGCTGAAAGTTGGAGTGAGATGTCTTCCATAT
CTATACCTTTGTGCACAGTTGAATGGGAAGTGTGTTGGGTTTAGGCCATCTTAGAGTTGATT
GATCGAAAAACCAGACAGGAAGTGGTGGGAGTCAAGTGGGGAAAGTTGGTGAATGTGGA
ATAACTTACCTTTGTGCTCCACTTAAACCAGATGTGTTGCAGCTTTCCTGACATGCAAGGA
TCTACTTTAATCCACACTCTCATTAATAAATTGAATAAAAGGGAATGTTTTGGCACCTGA
TATAATCTGCCAGGCTATGTGACAGTAGGAAGGAATGGTTTCCCTAACAAGCCCAATGC
ACTGGTCTGACTTTATAAATAATTAATAAATAAATGAAGTATTATC

FIG. 1K

//

13718.2

AAACTGGACCTGCAACAGGGACATGAATTTACTGCARGGTCTGAGCAAGCTCAGCCCCTCT
ACCTCAGGGCCCCACAGCCATGACTACCTCCCCAGGAGCGGGAGGGTGAAGGGGGCCTG
TCTCTGCAAGTGGAGCCAGAGTGGAGGAATGAGCTCTGAAGACACAGCACCCAGCCTTCT
CGCACCAGCCAAGCCTTAAGTGCCTGACCTGAACCAAGCCAGCTGAAGTGGCCC
TCCAAGGGACAGGAAGGCTGGGGGAGGGAGTTTACAACCAAGCCATTCCACCCCCTCCC
CTGCTGGGGAGAATGACACATCAAGCTGCTAACAATTGGGGGAAGGGGAAGGAAGAAAA
CTCTGAAAACAAAATCTTGT

13722.3

CATGCGTTTCACCACTGTTGGCCAGGCTGGTCTCGAACTCCTGGCCTCAAGCAATCCACCC
GCCTCAGCCTCCAAAAGTGTGGGATTACAGATGTGAGCCATGGCACCATGCCAAAAGGC
TATATTCCTGGCTCTGTGTTTCCGAGACTGCTTTTAATCCCACTTCTCTACATTAGATTA
AAAAATATTTTATTCATGGTCAATCTGGAACATAATTACTGCATCTTAAGTTTCCACTGAT
GTATATAGAAGGCTAAAGGCACAATTTTTATCAAATCTAGTAGAGTAACCAACATAAAAA
TCATTAATTACTTTCAACTTAATACTAATTGACATTCTCAAAGAGCTGTTTTCAATCCT
GATAGGTTCTTTATTTTTTCAAAATATATTGGCCATGGGATGCTAATTTGCAATAAGGCGC
ATAATGAGAATACCCCAAACTGGA

13722.4

GTTGGACCCCCAGGGACTGGAAGACACTCTTCCCCGAGCTGTGGCGGGAGAAGCTGAT
GTTCTTTTTTATTATGCTTCTGCATCCGAATTTGATGAGATGTTTGTGGGTGTGGGAGCCAG
CCGTATCAGAAATCTTTTTAGCGAAGCAAGCGGAATGCTCCTTGTGTTATATTTATTGAT
GAATTAGATTCTGTTGGTGGGAAGACAATTGAATCTCCAATGCCATCCATTTCAAGGCAGA
CCATAAATCAACTTCTTGCTGAAATGGATGGTTTTAAACCCAATGAAGGAGTTATCATAAT
AGGAGCCACAAACTTCCCAGAGGCATTAGATAATGCCTTAATACCGTCTGGTCTGTTTTGA
CATGCAAGTTACAGTTCCAAGCCAGATGTAAAAGGTGCAACAGAAATTTTGAATGGTA
TCTCAATAAAATAAAGTTTGTCAATCCCGTTGATCCAGAAATTATAGCCTCGAGGTACTG
GTGGCTTTTCCCGAAGCAGAGTTGGGAGAATCTT

13724-13698-13748

GCCTACAACATCCAGAAAGAGTCTACCCCTGCACCTGGTGTCTSCGTCTCAGAGGTGGGATGC
AGATCTTCGTGAAGACCCCTGACTGGTAAGACCATCACTCTCGAAGTGGAGCCGAGTGACA
CCATGAGAACGTCAAAGCAAAGATCCARGACAAGGAAGGCRTYCCTCCTGACCAGCAGA
GGTTGATCTTTCCCGAAAGCAGCTGGAAGATGGDCCGACCCCTGTCTGACTACAACATCC
AGAAAGAGTCYACCCTGCACCTGGTCTCCGTCTCAGAGGTGGGATGCARATCTTCGTGA
AGACCCCTGACTGGTAAGACCATCACCCCTCGAGGTGGAGCCCAGTGACACCATCGAGAATG
TCAAGGCAAAGATCCAAGATAAGCAAGGCATCCCTCCTGATCAGCAGAGGTTGATCTTTG
CTGGGAAACAGCTGGAAGATGCACCCACCCCTGTCTGACTACAACATCCAGAAAGAGTCCA
CTCTGCACTTGGTCTCGGCTTGAGGGGGGGGTGTCTAAGTTTCCCTTTTAAGGTTTCMAC
AAATTTCAATTCGACTTTCCTTTCAATAAAGTTGTTGCATTCCC

FIG. II

000T80-7039E960

13730.1

GAACTGGGCCCTGAGCCCAAGTCATGCCCTGTGTCCGATCTGCCGTGTACCTCTGTGCC
TGCCCCCTCACCCCTCCCTCCTGGTCTTCTGAGCCAGCACCATCTCCAAATAGCCTATTCCCTT
CCTGCAAATCACACACATGCGGGCCACACATACCTGCTGCCCTGGAGATGGGGAAGTA
GGAGAGATGAATAGAGGGCCATACATTGTACAGAAGGAGGGGCAGGTGCAGATAAAAGC
AGEAGACCCAGCGGCAGCTGAGGTGCAATGGAGCACGGTTGGGGCCGGCATTGGGCTGAGC
ACCTGATGGGCCTCATCTCGTGAATCCTCGAGGCAGCGCCACAGCAGAGGAGTTAAGTGG
CACCTGGGCGGAGCAGAGCAGGAGACTGAGGGTCAGAGTGGAGGCTAAGCTGCCCTGGA
ACTCCTCAATCTTGCTGCCCTAGTATGAAGCCCCCTTCTGCCCTACAATTCTGA

13732.1

ATGGATCTTACTTTGCCACCCAGGTTGGAGTGCAGTGTGCAATCTTGGCTCACTGCAGCC
TTAACCTCCCAGGCTCAAGCTATCCTCCTGCCAAAGCCTTCCACATAGCTGGGACTACAGG
TACACNGCCACCACACCCAGCTAAAATTTTGTATTTTTTGTAGAGACGGGATCTCGCCAC
GTTGCCCAGGCTGGTCCCATCCTGACCTCAAGCAGATCTGCCACCTCAGCCCCCAACGT
GCTAGGATTACAGGCGTGAGCCACCGCACCCAGCCTTTGTTTTGCTTTTAATGGAATCACC
AGTCCCCCTCCGTGTCTCAGCAGCAGCTGTGAGAAATGCTTTGCATCTGTGACCTTTATGA
AGGGGAACCTCCATGCTGAATGAGGGTAGGATTACATGCTCCTGTTTCCCGGGGGTCAAG
AAAGCCTCAGACTCCAGCATGATAAGCAGGGTGAG

13732.2

ATACGGGCTTTAAGGAGGGAATTCAGCTTCAATGAGGTGCTAAGGCCAGGGCTCTTATCC
AGTAAGACTGGGGTCTTACATGAGAAAGAGACACCCGAGGTCTTCTCTGCGGTGTG
AGGATGCATCAAGAAGGCGGGCGTCTGCAAGCGAAGGAGAGCCCGCACCAGAAACCGAC
ACCTTCATCTTGGACTTGCAGGCTCTAGAAGTGAAGAAATAACTGTCTGTTGGTTAAGCCA
CCCAGTTTGTAGTATTTCTTTATGGCTTCTAAGCAGACTAACAACAAACACCCAAAATT
AACTGATGGCTTCGCTGTCTTCTGTAATAAATTGCTATGAGAGAACTTTCACTCACTGTTTT
GCAGTTTCTCCCTCAGTCCCTGGTTCTTCTCTCACATAATCCCAATTTCAATTTATAGTTC
ATGGCCCCAGGCAGAGTCATTATCAGGGCATCTCCTGAGCTAAACCAGCACCTGCTCTGCT
CACTTCTTGACTGGCTGCTCATCATGAGGCTCTTGCAGAGATTTCAATTTCTCCCGTGCCA
GGTACTTCACGCACCAAGCTCA

FIG. 1M

[illegible]

13735.2

15-36.1

13737.1&2

FIG. 1N

13742.1

AAACATTGAGATGGAATGATAGGGTTTCCCAGAATCAGGTCCATATTTAACTAAATGAA
AATTATGATTTATAGCCTTCTCAAATACCTGCCATACTTGATATCTCAACCAGAGCTAATTT
TACCTCTTTACAAAATTAATAAGCAAGTAACTGGATCCACAATTTATAATACCTGTCAATT
TTTTCTGTATTAAACCTCTATCATAGTTTAAAGCCTATTAGGGTACTTAATCCTTACAAATAA
ACAGGTTTAAAATCACCTCAATAGGCAACTGCCCTTCTGGTTTCTTCTTTGACTAAACAAT
CTGAATGCTTAAGATTTTCCACTTTGGGTGCTAGCAGTACACAGTGTTACACTCTGTATTCC
AGACTTCTTAAATTATAGAAAAAGGAATGTACACTTTTTGTATTCTTTCTGAGCAGGGCCG
GGAGGCAACATCATCTACCATGGTAGGGACTTGTATGCATGGACTACTTTA

14351.1

ACTCTGTGCGCCAGGCTGGAGCCCBTGGMGCGATCTCGACTCCCTGCAAGCTMCGCCTC
ACAGGWTGATGCCATTCTCCTGCCTCAGCATCTGGAGTAGCTGGGACTACAGGCGCCAGC
CACCATGCCAGCTAATTTTT

14351.2

ACCTTAAAGACATAGGAGAATTTAACTGGGAGAGAAAACCTTACAAATGTAAGGTTTCTG
ACAAGACTTGGGAGTGATTACACCTGGAAACAACATACTGGACTTCACACTGGABAGAAA
CCTTACAAGTGTAATGAGTGTGCCAAGCCCTTTGGCAAGCAGTCAACACTTATTCACCATC
AGGCAATTCA

14354.2

AGTCAGGATCATGATGGCTCAGTTTCCCACAGCGATGAATGGAGGGCCAAATATGTGGGC
TATTACATCTGAAGAACCTACTAAGCATGATAAACAGTTTGATAACCTCAAACCTTCAGGA
GGTTACATAACAGGTGATCAAGCCCGTACTTTTCTACAGTCAGGTCTGCCGCCCCCGG
TTTTAGCTGAAATATGGCCCTTATCAGATCTGAACAAGGATGGGAAGATGGACCAGCAAG
AGTTCTCTATAGCTATGAAACTCATCAAGTTAAAGTTGCAGGGCCAAACAGCTGCCTGTAGT
CCTCCCTCCTATCATGAACAACCCCGTATGTTCTCTCCACTAATCTCTGCTCGTTTTGGGA
TGGGAAGCATGCCCAATCTGTCCATTCAACAGCCATTGCCCTCCAGTTGCACCTATAGCAAC
ACCCTTGTCTCTCTACTTCAGGGACCAGTATTCCTCCCTAATGATGCCTCCT

14354.1

CTTTCGATTTCTTCAATTTGTACGTTTGATTTATGAAGTTGTTCAAGGGCTAACTGCTG
TGTATTATAGCTTTCTCTGAGTTCTTCAGCTGATTTGTTAAATGAATCCATTTCTGAGAGCT
TAGATGCAGTTTCTTTTCAAGAGCATCTAAATGTTCTTTAAGTCTTTGGCATAATTTCTCC
TTTTCTGATGACTTTCTATGAAGTAAACTGATCCCTGAATCAGGTGTGTTACTGAGCTGCAT
GTTTTTAAATTTCTTTGTTTAAATAGCTGCTTCTCAGGGACCAGATAGATAAGCTTATTTGAT
ATTCTTAAAGCTCTTGGTGAAGTTGTTCGATTTCCATAATTTCCAGGTACACTGGTTATCC
CAAACCTCT

FIG. 1P

16431.1.2

GTGGAGGTGAAACGGAGGCAAGAAAGGGGGCTACCTCAGGAGCGAGGGACAAAGGGGGC
GTGAGGCACCTAGGCCGCGGCACCCCGGCGACAGGAAGCCGTCTGAACCGGGCTACCGG
GTAGGGGAAGGGCCCGCGTAGTCCTCGCAGGGCCCCAGAGCTGGAGTCGGCTCCACAGCC
CCGGGCCGTGCGCTTCTCACTTCCTGGACCTCCCCGGCGCCCGGGCCTGAGGACTGGCTCG
GCGGAGGGAGAAGAGGAAACAGACTTGAGCAGCTCCCCGTTGTCTCGCAACTCCACTGCC
GAGGAACTCTCATTTCTTCCCTCGCTCCTTCACCCCCACCTCATGTAGAAAGGTGCTGAA
GCGTCCGGAGGGGAAGAAGAACTGGGCTACCGTCTGGCCTTCCCMCCCCCTTCCCGGGG
CGCTTTGGTGGGCGTGGAGTTGGGGTTGGGGGGTGGGTGGGGTTCTTTTTTGGAGTGT
GGGGAACCTTTTTTCCCTTCTTCAGGTCAGGGGAAAGGGAATGCCAATTCAGAGAGACAT
GGGGGCAAGAAGGACGGGAGTGGAGGAGCTTCTGGAACCTTTCAGCCGTATCGGGAGG
CGGCAGCTCTAACAGCAGAGAGCGTCACCGCTTGGTATCGAAGCACAAGCGGCATAAGTC
CAAACACTCCAAAGACATGGGGTTGGTGACCCCGAAGCAGCATCCCTGGGCACAGTTAT
CAAACCTTTGGTGGAGTATGATGATATCAGCTCTGATTCCGACACCTTCTCGATGACATG
GCCTTCAAACCTAGACCGAAGGGAGAACGACGAACGTCGTGGATCAGATCGGAGCGACCGC
CTGCACAAACATCGTCACCACCAGCACAGGCGTTCCCGGGACTTACTAAAAGCTAAACAG
ACCG

16432-1

GACATGTTTGCCTGCAGGGGACCAGAGACAATGGGATTAGCCAGTGCTCACTGTTCTTTAT
GCTTCCAGAGAGGATGGGGACAGCTCTCAGGTGAGAATCCAGGCTGAGAAGGCCATGCTG
GTTGGGGGCCCCCGGAAGCAGGTCGGGATCCTCCCTGGCATCAGCGTAGACCCGCTGCTC
AGGCTTGGGGTACCAAACCTCATGCTCTGTACTGTTTTGGCCCCATGCGGTGAGAGGAAAAC
CTAGAAAAAGATTGCTGCTCTAAGGAATCAGCTGCCCCCTCATCCTCCGCATCCAATGCT
GGTGACAACATATTCCTCTCTCCAGGACACAGACTCGGTGACTCCACACTGGGCTGAGTGG
CCTCTGGAGGCTCGTGCCCTAAGCCAGGCGCTCCGTAAGGCTGATCGGCTGAAGTGGGTGG
GGTGAGGGTTTCTGACCCTTCCGTTCCCATCCCATAAACCGCTGTCAATGAGCTCACACTGT
GGTCA

16432-2

GATGGCATGGTCGTTGCTAAATGCTCCTCTGGCATGGAGCACTTCCCTCTGTGAGCCCAGG
GGACCCGCTGTCCCTCGAGCTTGGGGCAAGGAGGGAAGAGTGATACCAGGAAGGTGGG
GCTGCAGCCAGGGGCCAGAGTCAGTTCAGGGAGTGCTCCTCGGCCCTCAAAGCTCCTCCG
GGGACTGCTCAGGAGTGATGGTGCCCTGGAGTTTGGCCCAACTTCCCTGGCCACCCTGGAA
GGTGCTGCTGCTCCAGGCTCTAGGCTGGGCTGATGGGTTTCTCCAGGACACAAGTATC
ATTAAAGCCACCCTCTCCTCAGCTTGTGAGGCGGCACATGTGGGACAGGCTGTGCTCACA
CCCCCTCCCTGCTCTGCTCCATCAGGAGGAGCCAGTGGAACTTCGGAAAGCTCCCAG
CATCTCAGGAGCCCTCAAAGTCTGCTGCTGCGGCAAGCTCTGGTTCTCTGACTGGAGGTCA
TCTGGGCTTGGCCTGCTCTCTCTCC

17184.3

TAAAAAAGTGTAACAAGGTTTATTTAGACTTTCTTCATGCCCCAGATCCAGGATGTCTA
TGTAACCGTTATCTTACAAAGAAAGCACAATATTTGGTATAAACTAAGTCAGTGAAGTGC
TTAACTGAAATACCGTCCATCCAAAGTGGGTTAAGGTAATACTACCTGACGATATTGGC
GGGGATCCTGCAGTTTGGACTGCTTCCCGGCTTGTCCAGGCTTCCGGGTCTGTTCTTGGC
ACTCATGGGGACAGGCATCCTGCTGCTGTGGGGCCCCGCTGGAGCCCTTACGTGAAGCT
GAAGGTATCGACSTAGGGGGCTCTAGGGCAGTGGGACCTTCATCCGGAACCTAACAAAGG
TCGGGGAGAGGCTCTTGGGCTATGTGGC

FIG. 1Q

17184.4

CAAGCGTTCCTTTATGGATGTAATAATCAACAGTCATGCTGAGCCATCCCGGGCTGACAGT
CACGTTWAAGACACTAGGTGCGGGCGCCACAGTGCCACCCAAAGGAGAAGAAGAAATTTGGA
ATTTTCCATGAAGATGTACGGAAATCTGATGTTGAATATGAAAAATGGCCCCAAATGGAA
TTCCAAAAGGTTACCACAGGGGCTGTAAGACCTAGTGACCCCTCTAAGTGGGAAAGAGGA
ATGGAGAATAGTATTTCTGATGCATCAAGAATCAGAAATATAAACTGAGATCATAATG
AAGGAAAATTCATATCCAATATGAGTTTACTCAGAGACAGTAGAACTATTCCCAGG

17185.1

TAGGAATAACAAATGTTTATTCAGAAATGGATAAGTAATACATAATCACCCCTTCATCTCTT
AATGCCCCCTTCTCTCTCTGACAGGAGACACAGATGGGTAAACATAGAGGCATGGGAA
GTGGAGGAGGACACAGGACTAGCCCACCACTTCTCTTCCCGGTCTCCCAAGATGACTGCT
TATAGAGTGGAGGAGGCAACAGGTCCCTCAATGTACCAGATGGTCACCTATAGCACCA
GCTCCAGATGGCCACGTGGTTGACGCTGGACTCAATGAACTCTGTGACAACCAGAAGAT
ACCTGCTTTGGGATGAGAGGGAGGATAAAGCCATGCAGGGAGGATATTTACCATCCCTAC
CCTAAGCACAGTGCAAGCAGTGAGCCCCCGGTCTCCAGTACCTGAAAAACCAAGGCCTAC
TGNCTTTTGGATGCTCTCTTGGGCCACG

17188.2

AAGCCTCCTGCCCTGGAAATCTGGAGCCCCCTGGAGCTGAGCTGGACGGGGCAGGGAGGG
GCTGAGAGGCAAGACCGTCTCCCTCCTGCTGACCTGCTTCCCCACCAAGCCACTGCTGGGC
ACACCAGAAACGCCAGCAGAGAAATGGGAGCGGAGAGTCTTAGCCCTGGAGCTGAGG
CTGCCTCTGGGCTGACCCGCTGCTGTACGTGGCCAGAAGTGGGCTGGCATCTGGCATCC
ATTTGAGCCCAAGGTGGAGGAAGCGAGGCCAACAGAGCAAAACCTATTCCTGCTGTGAC
AACACAGCCCTTGTCCACCCAGCCTAAGTCCAGGAGCGTGAAGTCAAGGCAGCCAG
TCGGGGAGGACGAGGTAAGTCAAGCAATGTACCTTGTAGCCTATGCGCTCAATGGCC
CGGAGGGCCAGCAACCCCCCGCACAGCTCAGCCAACAGCAGTGCCTCTGCAGGCACCAAG
AGAGCGATCATGGACTTGAGCCCCGTCTT

17190.1

GTTTGGCAGAAGACATGTTTAAATAACAATTCATATTTAAAAATACAGCAACAATTCTCT
ATCTGTCCACCATCTTGCTTCCCTTCTGCGGCTGAGGCAGACAAAGGAAAGGTAATGA
GGTTAGGGCCCCCAGGCGGGCTAAGTGCTATTGGCCTGCTCTGCTCAAAGAGAGCCATA
GCCAGCTGGGCACGGCCCCCTAGCCCTCCAGTTGCTGAGGCGGCAGCGGTGGTAGAGT
TCTTCACTGAGCCGTGGGCTCCAGTCTCCAGGAGAACTTCTGCCACAGCCCTGGCTCTA
CGCCCEGAAAGAGGTGGAGCCCTGAGAACCGGAGGAAAACATCCATCACCTCCAGCCCT
CCAGGGCTTCTCTCTTCTGCGCTGCCAGTTCACTGCCAGCGGGCTCGGGCCGCCAG
GTAGTCAGCGTTGTAGAAGCAGCCCTCGGAGAAAGCCTGCCGGTCAAATCTCCCCGCTATA
GGAGCCCCCGGGAGGGGTGACCAAC

FIG. 1R

17190.2

CAAGTTGAACGTCAGGCTTGGCAGAGGTGGAGTGTAGATGAAAACAAAGGTGTGATTATG
AAGAGGATGTGAGTCCTTTGGGTGTAGGAGAGAAAGGCTGTTGAGCTTCTATTTCAAGAT
ACTTTTACCTGTGCAAAAAGCACATTTTCCACCTCCTTCTCATGGCATTGTGTAAGGTGAG
TATGATTCTATTCCATCTGCATTTTAGAGGTGAAGAATAACGTACAAGGGATTCAAGTGAT
TAGCAAGGGACCCCTCACTAAGTGTTGATGGAGTTAGGACAGAGCTCAGCTGTTTGAATCT
CAGAGCCCAGGCAGCTGGAGCTGGGTAGGATCCTGGAGCTGGCACTAATGTGAGGTGCAT
TCCCTCCAACCCAGGCTCAGATCCGGAACCTGACCGTGCTGACCCCCGAAGGGGAGGCAG
GGCTGAGCTGGCCCGTTGGGCTCCCTGCTCCTTTACACCACACTCTCGCTTTGAGGTGCTG
GGCTGGGACTACTTCACAGAGCAGC

17191.2&89.2

TGGCCTGGGCAGGATTGGGAGAGAGGTAGCTACCCGGATGCAGTCCTTTGGGATGAAGAC
TATAGGGTATGACCCCATCATTTCCCCAGAGGTCTCGGCCTCCTTTGGTGTTCAGCAGCTG
CCCCTGGAGGAGATCTGGCCTCTCTGTGATTTCACTGTGCACACTCCTCTCCTGCCCTC
CAGACAGGCTTGCTGAATGACAACACCTTTGCCAGTGCAAGAAGGGGGTGGCTGTGGT
GAACTGTGCCCGTGGAGGGATCGTGGACGAAGGCGCCCTGCTCCGGGCCCTGCAGTCTGG
CCAGTGTGCCGGGGCTGCACTGGACGTGTTTACGGAAGAGCCGCCACGGGACCGGGCCTT
GGTGGACCATGAGAATGTCATCAGCTGTCCCCACCTGGGTGCCAGCACCAAGGAGGCTCA
GAGCCGCTGTGGGGAGGAAATTGCTGTTCAAGTTCGTGGACATGGTGAAGGGGAAATCTCT
CACGGGGGTTGTGAATGCCCACCCCTT

FIG. 1S

AGCCAGATGGCTGAGAGCTGCAAGAAGAAGTCAGGATCATGATGGCTCAGTTTCCACAG
CGATGAATGGAGGGCCAAATATGTGGGCTATTACATCTGAAGAACGTACTAAGCATGATA
AACAGTTTGATAACCTCAAACCTTCAGGAGGTTACATAACAGGTGATCAAGCCCGTACTTT
TTTCTACAGTCAGGTCTGCCGGCCCCGGTTTTAGCTGAAATATGGGCCTTATCAGATCTG
AACAAAGGATGGGAAGATGGACCACCAAGAGTTCTCTATAGCTATGAAACTCATCAAGTTA
AAGTTGCAGGGCCAAACAGCTGCCTGTAGTCTCTCCCTCTATCATGAAACAACCCCTATGT
TCTCTCCACTAATCTCTGCTCGTTTTGGGATGGGAAGCATGCCAATCTGTCCATTATCAG
CCATTGCCCTCCAGTTGCACCTATAGCAACACCCTTGTCTTCTGCTACTTCAGGGACCAGTAT
TCTTCCCCTAATGATGCCTGCTCCCCTAGTGCCTTCTGTAGTACATCCTCATTACCAAATG
GAACTGCCAGTCTCATTACGCCCTTATCCATTCTTATCTTCTTCAACATTGCCTCATGCA
TCATCTTACAGCCTGATGATGGGAGGATTTGGTGGTGCTAGTATCCAGAAGGCCCAGTCTC
TGATTGATTTAGGATCTAGTAGCTCAACTTCTCAACTGCTTCCCTCTCAGGGAACCTCACCT
AAGACAGGGACCTCAGAGTGGGCAGTTCTCAGCCTTCAAGATTAAAGTATCGGCAAAAA
TTTAATAGTCTAGACAAAGGCAAGGCGGATACCTCTCAGGTTTTCAAGCTAGAAATGCC
TTCTTCAGTCAAATCTCTCTCAAACCTCAGCTAGCTACTATTGGACTCTGGCTGACATCGAT
GGTGACGGACAGTTGAAAGCTGAAGAATTTATTCTGGCGATGCACCTCACTGACATGGCC
AAAGCTGGACAGCCACTACCCTGACGTTGCCCTCCCGAGCTTGTCCCTCCATCTTTCAGAG
GGGAAAGCAAGTTGATTCTGTAAATGGAAETCTGCCTTCATATCAGAAAACACAAGAAG
AAGAGCCTCAGAAGAACTGCCAGTTACTTTTGAGGACAAACGGAAAGCCAACTATGAAC
GAGGAAACATGGAGCTGGAGAAGCGACGCCAAGTGTGATGGAGCAGCAGCAGAGGGAG
GCTGAACGCAAGCCCAGAAAGAGAAGCAAGAGTGGGAGCGGAAACAGAGAGAACTGC
AAGAGCAAGAATGGAAGAAGCAGCTGGAGTTGGAGAAACGCTTGGAGAAACAGAGAGAG
CTGGAGAGACAGCGGGAGGAAGACAGGAGAAAGGAGATAGAAAGACGAGAGGCAGCAA
AACAGGAGCTTGAGACACAACGCCGTTTGAATGGGAAAGACTCCGTCCGCAGGAGCTGC
TCAGTCAGAAGACCAGGGAACAAAGCAACACATTGTCAGGCTGACCTCCAGAAAGAAAAGT
CTCCACCTGGAAGTGGAAAGCAGTGAATGGAAACATCAGCAGATCTCAGGCAGACTACAA
GATGTCCAAATCAGAAAGCAAAACACAAAGACTGAGCTAGAAGTTTTGGATAAACAGTGT
GACCTGGAATTAATGGAATCAAACAACTTCAACAAGAGCTTAAGGAATATCAAAATAAG
CTTATCTATCTGGTCCCTGAGAACAGCTATTAAACGAAAGAAATTAACAAATGCAGCTCA
GTAACACACCTGATTCAGGATCAGTTTACTTCATAAAAAGTCATCAGAAAAGCAAGAAT
TATGCCAAAGACTTAAAGAACAAATGATGCTCTTGAAAAAGAACTGCACTAAAGCTCT
CAGAAATGGATTCAATTAACAAATCAGCTGAACGAACTCAGAGAAAGCTATAATACACAGC
AGTTAGCCCTTGAACAACCTTCATAAAATCAAACGTCACAAATTAAGGAAATCGAAAGAA
AAAGATTAGAGCAAAAAA

FIG. 2A

ATGGCAGTGACATTCACCATCATGGGAACCACTTCCCTTTTCTTCAGGATTCTCTGTAGTG
GAAGAGAGCACCCAGTGTTGGGCTGAAACATCTGAAAGTAGGGAGAAGAACCTAAAAAT
AATCAGTATCTCAGAGGGCTCTAAGGTGCCAAGAAGTCTCACTGGACATTTAAGTGCCAA
CAAAGGCATACTTTGGAATCGCCAAGTCAAACTTTCTAACTTCTGTCTCTCTCAGAGAC
AAGTGAGACTCAAGAGTCTACTGCTTTAGTGGCAACTACAGAAAACTGGTGTTACCCAGA
AAACAGGAGCAATTAGAAATGGTTCCAATATTTCAAAGCTCCGCAAACAGGATGTGCTT
TCCTTTGCCCATTTAGGGTTTCTTCTTTCTTTCTTTTCTTTTATTAACCACTA

FIG. 2B

000180-10895960

ATATCTAGAAGTCTGGAGTGAGCAAACAAGAGCAAGAAACAAAAAGAAGCCAAAAGCAG
AAGGCTCCAATATGAACAAGATAAATCTATCTTCAAAGACATATTAGAAGTTGGGAAAAT
AATTCATGTGAACTAGACAAGTGTGTTAAGAGTGATAAGTAAATGCACGTGGAGACAAG
TGCATCCCCAGATCTCAGGGACCTCCCCCTGCTGTACCTGGGGAGTGAGAGGACAGGAT
AGTGCATGTTCTTTGTCTCTGAAITTTTAGTTATATGTGCTGTAATGTTGCTCTGAGGAAGC
CCCTGGAAAGTCTATCCCAACATATCCACATCTTATATCCACAAATTAAGCTGTAGTATG
TACCCTAAGACGCTGCTAATTGACTGCCACTTCGCAACTCAGGGGCGGCTGCATTTTAGTA
ATGGGTCAAATGATTCACITTTATGATGCTTCCAAAGGTGCCTTGGCTTCTCTTCCCAACT
GACAAATGCCAAAGTTGAGAAAAATGATCATAATTTTAGCATAAACAGAGCAGTCGGCGA
CACCGATTTTATAAATAAACTGAGCACCTTCTTTTAAACAAACAAATGCGGGTTTATTTCT
CAGATGATGTTTCATCCGTGAATGGTCCAGGGAAGGACCTTTCACCTTGACTATATGGCATT
ATGTCATCACAAGCTCTGAGGCTTCTCCTTTCATCCTGCGTGGACAGCTAAGACCTCAGT
TTTCAATAGCATCTAGAGCAGTGGGACTCAGCTGGGGTGATTTGCCCCCATCTCCGGGG
GAATGCTGAAGACAATTTTGTTACCTCAATGAGGGAGTGGAGGAGGATACAGTGTACT
ACCAACTAGTGGATAAAGGCCAGGGATGCTGCTCAACCTCCTACCATGTACAGGACGTCTC
CCCATTACAACCTACCAATCCGAAGTGTCAACTGTGTCAAGGACTAAGAAACCTGGTTTTG
AGTAGAAAAGGGCCTGGAAAGAGGGGAGCĒAACAAATCTGTCTGCTTCTCCTCACATTAGTC
ATTGGCAAATAAGCATTCTGTCTCTTTGGCTGCTGCCTCAGCACAGAGAGCCAGAACTCTA
TCGGGCACCAGGATAACATCTCTCAGTGAACAGAGTTGACAAGGCCTATGGGAAATGCCT
GATGGGATTATCTTCAGCTTGTGAGCTTCTAAGTTTCTTTCCCTTCATTCTACCCTGCAAG
CCAAGTTCTGT.AAGAGAAATGCCTGAGTTCTAGCTCAGGTTTTCTTACTCTGAATTTAGATC
TCCAGACCTTCTCTGGCCACAATTCAAATTAAGGCAACAAACATATACCTTCCATGAAGCA
CACACAGACTTTTGAAGCAAGGACAATGACTGCTTGAATTGAGGCCTTGAGGAATGAAG
CTTTGAAGGAAAAGAACTTTGTTCCAGCCCCCTTCCCACTCTTCATGTGTTAACCAC
TGCTTCTCTGGACCTTGGAGCCACGGTGAAGTATTACATGTTGTTATAGAAAAGTATTT
AGAGTTCTGATCGTTCAAGAGAAATGATTAATAATACATTTCCTA

FIG. 2C

Element Display											Y
Cell Exp	Probe 1	1 x p	Probe 2	Ut 1/2 Element	Plate/Well	Probe 1	5/0	A%	Probe 2	5/0	A%
1.7	304A Ovary T (nuclei)		272A Doublet cells	42240600 (420)	421G0196 (C.11)	2303	13.7	50	1430	2.0	50
1.1	315A Ovary Tumor		S7 Ovary N	42220626 (420)	421G0196 (C.11)	355	2.7	54	382	1.0	54
1.0	261A Ovary Tumor		S10 Skeletal muscle N	42230621 (420)	421G0196 (C.11)	1290	6.9	51	707	1.9	51
1.1	264A Ovary Tumor		S2 Pancreas H	422N0629 (420)	421G0196 (C.11)	9580	44.0	62	1100	2.3	62
1.2	306A		S40	42230605 (420)	421G0196 (C.11)	510	3.6	50	619	2.0	50
1.7	265A Ovary Tumor		C15 Heart N	422O0624 (420)	421G0196 (C.11)	2305	14.0	53	409	2.2	53
1.4	S25 Ovary Tumor		C14 Bone Marrow N	42210619 (420)	421G0196 (C.11)	531	3.5	53	743	2.0	53
	303A		H	42230609 (420)	421G0196 (C.11)	1042	10.0	39	071	2.0	39
1.9	S22 Ovary Tumor		C19 Intestine H	42200627 (420)	421G0196 (C.11)	453	3.3	68	857	3.2	68
1.2	9405 1-P		9405 5-P	422Y0602 (420)	421G0196 (C.11)	1082	12.2	57	594	2.3	57
1.5	202A Ovary Tumor		334A Lung Intestine H	422A0622 (420)	421G0196 (C.11)	1406	7.5	55	965	2.2	55
1.1	S115		C110	422C0604 (420)	421G0196 (C.11)	509	3.4	51	573	2.0	51
1.1	200A Ovary Tumor		C12 Lung N	422V0625 (420)	421G0196 (C.11)	700	4.5	54	651	2.1	54
2.1	201A Ovary Tumor		S6 Stomach N	422A0621 (420)	421G0196 (C.11)	626	4.6	46	1335	3.0	46
1.0	S23 Ovary Tumor		S56 Spinal Cord N	422G0620 (420)	421G0196 (C.11)	3096	22.2	50	502	2.2	50
1.0	205A		270A	422Q0606 (420)	421G0196 (C.11)	2251	14.7	46	1256	2.0	46
1.0	9334		P2	422R0601 (420)	421G0196 (C.11)	552	3.4	72	1028	2.3	72
1.6	305A Ovary T		S01 Fetal tissue	422X0607 (420)	421G0196 (C.11)	8126	35.6	50	1449	2.0	50
3.5	263A Ovary Tumor		S73 Breast N	422K0623 (420)	421G0196 (C.11)	439	3.2	61	1531	3.4	61
3.3	302A		C119	422O0610 (420)	421G0196 (C.11)	387	3.2	50	1270	2.1	50
1.0	266A		S27	42250603 (420)	421G0196 (C.11)	4242	22.2	58	689	2.0	58

FIG. 3

TCGAGCGGCCGCCCCGGGCAGGTCCTTCAGACTTGGACTGTGTCACTGCCAGGCTTCCAG
GGCTCCAACCTTGCAGACGGCCTGTTGTGGGACAGTCTCTGTAATCGCGAAAGCAACCATG
GAAGACCTGGGGGAAAACACCATGGTTTTATCCACCTGAGATCTTTGAACAACCTTCATCT
CTCAGCGTGCGGAGGGAGGCTCTGGACTGGATATTTCTACCTCGGECGCGACCACGCT

FIG. 4

TAGCGYGGTCGCGGCCGAGGYCTGCTTYTCTGTCCAGCCCAGGGCCTGTGGGGTCAGGGC
GGTGGGTGCAGATGGCATCCACTCCGGTGGCTTCCCCATCTTCTCTGGCCTGAGCAAGGT
CAGCCTGCAGCCAGAGTACAGAGGGCCAACACTGGTGTCTTGAACAAGGGCCTTAGCAG
GCCCTGAAGGRCCCTCTCTGTAGTGTGAACTTCTGGAGCCAGGCCACATGTTCTCCTCAT
ACCGCAGGYTAGYGATGGTGAAGTTGAGGGTGAAATAGTATTMANGRAGATGGCTGGCA
RACCTGCCCCGGCGGCCGCTCSAAATCC

FIG. 5

AGCGTGGTCGCGGCCGAGGTGTCCTTCAGGGTCTGCTTATGCCCTTGTTCAAGAACACCAG
TGTCAGCTCTCTGTACTCTGGTTGCAGACTGACCTTGCTCAGGCCTGAGAAGGATGGGGCA
GCCACCAGAGTGGATGCTGTCTGCACCCATCGTCCTGACCCCAAAAGCCCTGGACTGGACA
GAGAGCGGCTGTACTGGAAGCTGAGCCAGCTGACCCACGGCATCACTGAGCTGGGCCCCCT
ACACCCTGGACAGGGACAGTCTCTATGTCAATGGTTTCACCCATCGGAGCTCTGTACCCAC
CACCAGCACCGGGGTGGTCAGCGAGGAGCCATTCAACCTGCCCCGGGCGGCCGCTCGA

000T80" T089E960

FIG. 6

A

TTGGGGNTTTMGAGCGGCCGCCCGGGCAGGTACCGGGGTGGTCAGCGAGGAGCCATTAC
ACTGAACTTCACCATCAACAACCTGCGGTATGAGGAGAACATGCAGCACCCCTGGCTCCAG
GAAGTTCAACACCACGGAGAGGGTCCTTCAGGGCCTGCTCAGGTCCCTGTTCAAGAGCAC
CAGTGTGGCCCTCTGTACTCTGGCTGCAGACTGACTTTGCTCAGACTTGAGAAACATGGG
GCAGCCACTGGAGTGGACGCCATCTGCACCCTCCGCCTTGATCCCACTGGTCCTGGACTGG
ACAGAGAGCGGCTATACTGGGAGCTGAGCCAGTCCTCTGGCGGNGACNCCNCTT

B

AGCGTGGTCGCGGCCGAGGTCCAGTCCGAGCATGCTCTTTCTCCTGCCCACTGGCACAGTG
AGGAAGATCTCTGCTGTCAGTGAGAAGGCTGTCATCCACTGAGATGGCAGTCAAAAGTGC
ATTTAATACACCTAACGTATCGAACATCATAGCTTGGCCCAGGTTATCTCATATGTGCTCA
GAACACTTACAATAGCCTGCAGACCTGCCCGGGCGGCCGCTCGA

FIG. 7A and 7B

TGTGGTGTGAACTTCCTGGAGNCAGGGTGACCCATGTCCTCCCCATACTGCAGGTTGGTG
ATGGTGAAGTTGAGGGTGAATGGTACCAGGAGAGGGCCAGCAGCCATAATTGTSGRGCKG
SMGMSSGAGGMWGGWGTYYCWGAGGTTCYRARRTCCACTGTGGAGGTCCCAGGAGTGCT
GGTGGTGGGCACAGAGSTCYGATGGGTGAAACCAITGACATAGAGACTGTTCTGTCCAG
GGTGTAGGGGCCCAGCTCTTYRATGYCATGGYCAITGGYCAITKGCTYAGCTCCCAGTACAGCCRC
TCTCKGYYGMGWCCAGSGCTTTTGGGGTCAAGATGATGGATGCAGATGGCATCCACTCCA
GTGGCTGCTCCATCCTTCTCGGACCTGAGAGAGGTCAITGCTGCAGCCAGAGTACAGAGGG
CCAACACTGGTGTCTTTGAATA

FIG. 8

TCGAGCGGCCCGCCCGGGCAGGTCAGGAAGCACATTGGTCTTAGAGCCACTGCCTCCTGGA
TTCCACCTGTGCTGCCGACATCTCCAGGGAGTGCAGAAGGGAAGCAGGTCAAACCTGCTCA
GATCAGTCAGACTGGCTGTTCTCAGTTCTCACCTGAGCAAGGTCAGTCTGCAGCCAGAGTA
CAGAGGGCCAACACTGGTGTTCTTGAACAAGGGCTTGAGCAGACCCTGCAGAACCCTCTTC
CGTGGTGTTGAACTTCCTGGAAACCAGGGTGTTGCATGTTTTCTCATAATGCAAGGTTG
GTGATGG

FIG. 9

Gene Name	Bal Probs '1		P1	P2 Name	Probe 3	GEM ID	Probe1		Probe2		Probe3	
	Exp Name	Probe Name					Value	S/B	Value	S/B	Value	S/B
-42100188 (D3)	17.0	205A Ovary T	100	270A Liver N	4.22X0606	8620	1240	57.7	65	2.2	65	
-42100188 (D3)	15.9	52A Ovary Tumor	100	556 Spinal Cord N	4.22X0628	5894	1002	35.3	89	3.9	89	
-42100188 (D3)	15.7	185A Ovary T	100	591 Fetal tissue	4.22X0607	12151	2121	54.3	71*	2.8	71	
-42100188 (D3)	15.1	426A Ovary T (met)	100	415A Aorta N	4.22X0641	7487	1480	53.0	73	9.7	73	
-42100188 (D3)	13.5	263A Ovary Tumor	100	523 Breast F	4.22X0623	7302	2116	39.2	84	4.5	84	
-42100188 (D3)	13.1	183A Ovary T (met)	100	11 Colon N	4.22X0609	3714	1113	20.4	81	2.6	81	
-42100188 (D3)	13.0	913A Ovary T (SC T)	100	12 Skin F	4.22X0604	2435	814	12.1	75	2.1	75	
-42100188 (D3)	12.6	181A Ovary T (met)	100	222A Dendritic cells	4.22X0608	4578	1754	25.0	69	2.3	69	
-42100188 (D3)	12.2	261A Ovary Tumor	100	52 Pancreas F	4.22X0629	7904	3596	18.5	81	5.6	81	
-42100188 (D3)	12.0	386A Ovary T	100	510 PBMC (activated)	4.22X0605	2191	1081	14.0	90	2.9	90	
-42100188 (D3)	12.0	513A Ovary T (met)	100	C110 Small intestine	4.22X0604	1919	974	10.4	80	2.7	80	
-42100188 (D3)	12.0	45A Ovary Tumor	100	C15 Heart F	4.22X0624	1911	964	13.9	93	3.4	93	
-42100188 (D3)	12.0	15A Ovary Tumor	100	57 Ovary F	4.22X0626	1666	817	9.8	100	3.0	100	
-42100188 (D3)	11.9	428A Ovary T (met)	100	213A Esophagus F	4.22X0612	1827	3480	13.4	97	9.5	97	
-42100188 (D3)	11.6	261A Ovary Tumor	100	510 Skeletal muscle	4.22X0621	5914	1653	10.4	86	6.0	86	
-42100188 (D3)	11.6	266A Ovary T	100	522 Ovary F	4.22X0603	2019	1274	11.9	50	2.6	50	
-42100188 (D3)	11.6	522 Ovary Tumor	100	C19 Kidney F	4.22X0627	1746	1072	11.0	92	4.0	92	
-42100188 (D3)	11.4	9185 F P Ovary T (S)	100	9185 F P Ovary T (S)	4.22X0602	4204	3074	23.0	93	7.7	93	
-42100188 (D3)	11.4	262A Ovary Tumor	100	314A Lung Tumor	4.22X0622	4002	2101	16.6	89	4.0	89	
-42100188 (D3)	11.3	525 Ovary Tumor	100	361A Ovary F	4.22X0614	1643	1297	9.6	90	3.1	90	
-42100188 (D3)	11.2	429A Ovary T (met)	100	C119 Brain F	4.22X0610	2524	2084	22.0	65	24.9	65	
-42100188 (D3)	11.2	362A Ovary T	100	C112 Lung N	4.22X0625	2072	1663	10.9	88	2.3	88	
-42100188 (D3)	11.2	288A Ovary Tumor	100	S6 Stomach N	4.22X0620	1840	1473	10.7	87	3.8	87	
-42100188 (D3)	11.1	201A Ovary Tumor	100			1329	1204	9.1	90	3.5	90	

FIG. 10

Gene Name	Bal Probe 1		P1	Probe 2		GEM ID	Probe1		Probe2	
	Exp Name			P2 Name			Value	S/B	Value	S/B
-21H0181 (C1)	118.8 185A Ovary T			S91 Fetal tissue		-122X0607	26711	103.3	1424	2.0
-21H0181 (C1)	111.5 S21 Ovary Tumor			S56 Spinal Cord N		-122G0628	13559	65.3	1179	3.9
-21H0181 (C1)	111.1 126A Ovary T (unc)			115A Aorta F		-122X0611	14125	67.3	1273	5.6
-21H0181 (C1)	110.8 205A Ovary T			270A Liver N		-122Q0606	16121	93.1	1488	2.3
-21H0181 (C1)	15.1 261A Ovary Tumor			S71 Breast N		-122H0623	11326	58.2	2235	4.4
-21H0181 (C1)	14.6 364A Ovary T (unc)			272A Pancreatic cells		-122J0608	6583	24.5	1424	2.1
-21H0181 (C1)	14.4 261A Ovary Tumor			S2 Pancreas F		-122N0629	9865	40.9	2245	3.6
-21H0181 (C1)	14.4 499A Ovary T (unc)			161A Ovary N		-122H0614	2803	22.6	618	7.4
-21H0181 (C1)	14.2 261A Ovary Tumor			S10 Skeletal muscle		-122J0624	8271	39.5	1949	3.6
-21H0181 (C1)	13.8 511S Ovary T (unc)			C110 Small intestine		-122C0603	2281	11.6	607	2.1
-21H0181 (C1)	12.5 265A Ovary Tumor			C15 Heart F		-122Q0624	4192	19.2	1293	4.0
-21H0181 (C1)	12.3 522 Ovary Tumor			C19 Kidney F		-122Q0627	565	1.6	1276	1.9
-21H0181 (C1)	12.2 266A Ovary T			S22 Ovary N		-122S0603	2774	14.3	1260	2.7
-21H0181 (C1)	12.1 911A Ovary T (SC11)			12 Skin F		-122R0601	1774	8.4	837	2.1
-21H0181 (C1)	11.9 948S 1 P Ovary T (S)			948S 1 P Ovary T (S)		-122Y0602	6967	41.5	3726	9.2
-21H0181 (C1)	11.6 362A Ovary T			C119 Brain N		-122Q0610	2311	6.2	1471	1.9
-21H0181 (C1)	11.6 288A Ovary Tumor			C112 Lung N		-122Q0625	1657	9.7	1054	2.9
-1.5 S25 Ovary Tumor	11.4 262A Ovary Tumor			C11 Bone Marrow		-122H0619	848	4.5	1243	2.7
-21H0181 (C1)	11.2 486A Ovary T			31A Large intestine		-122A0622	3171	16.8	2214	3.8
-1.2 135A Ovary Tumor	11.2 135A Ovary Tumor			S40 PHN1 Cerebral		-122H0605	630	4.2	544	1.9
1.0 201A Ovary Tumor	1.0 201A Ovary Tumor			S7 Ovary N		-122J0626	592	3.7	740	2.6
-21H0181 (C1)	1.0 438A Ovary T (unc)			S6 Stomach N		-122W0620	1197	7.8	1237	3.5
-21H0181 (C1)	1.0 438A Ovary T (unc)			241A Esophagus N		-122H0612	783	4.5	797	2.4
-21H0181 (C1)	1.0 438A Ovary T (unc)			11 Colon F		-122H0609	3470	8.9	862	1.7

FIG. 11

Gene Name	Bal Probe 1		P1	P2 Name	Probe 2		QEM ID	Probe1		Probe2		Probe1 A%	S/B	Probe2 A%	S/B
	Exp Name				Value	Value		Value	Value						
42100182 (07)	116.7 426A Ovary T (met)	116.7 426A Ovary T (met)	415A Aorta N	422X0611	7706	462	46.3	75	4.5	75	4.5				
42100182 (07)	110.7 205A Ovary T	110.7 205A Ovary T	270A Liver N	422Q0606	10171	950	61.2	41	1.8	41	1.8				
42100182 (07)	119.9 385A Ovary T	119.9 385A Ovary T	S91 Fetal tissue	422X0607	14415	1459	62.1	48	2.2	48	2.2				
42100182 (07)	118.8 531 Ovary Tumor	118.8 531 Ovary Tumor	S36 Spinal Cord N	422C0628	7781	880	47.3	73	3.4	73	3.4				
42100182 (07)	116.4 383A Ovary T (met)	116.4 383A Ovary T (met)	11 Colon N	422H0609	4807	748	27.6	47	2.2	47	2.2				
42100182 (07)	115.1 261A Ovary Tumor	115.1 261A Ovary Tumor	S71 Breast N	422H0623	9815	1909	57.1	74	0.2	74	0.2				
42100182 (07)	114.9 429A Ovary T (met)	114.9 429A Ovary T (met)	361A Ovary N	422H0614	2601	543	20.3	61	6.7	61	6.7				
42100182 (07)	115.5 261A Ovary Tumor	115.5 261A Ovary Tumor	S72 Pancreas N	422H0629	7934	2274	38.8	71	3.9	71	3.9				
42100182 (07)	112.8 261A Ovary Tumor	112.8 261A Ovary Tumor	C11 Bone Marrow	422H0619	480	1375	3.5	80	3.0	80	3.0				
42100182 (07)	112.5 341A Ovary T (met)	112.5 341A Ovary T (met)	S10 Skeletal muscle	422H0624	8993	3245	34.6	69	5.1	69	5.1				
42100182 (07)	112.3 931A Ovary T (SCT)	112.3 931A Ovary T (SCT)	C110 Small intestine	422H0601	1864	748	8.1	67	2.2	67	2.2				
42100182 (07)	112.3 931A Ovary T (SCT)	112.3 931A Ovary T (SCT)	P1 Skin F	422R0601	2552	1143	12.7	41	2.6	41	2.6				
42100182 (07)	112.3 931A Ovary Tumor	112.3 931A Ovary Tumor	C19 Embryo F	422R0627	386	889	3.2	69	3.4	69	3.4				
42100182 (07)	112.3 931A Ovary T (met)	112.3 931A Ovary T (met)	92A Esophage cells	422H0608	3516	1867	18.7	55	2.2	55	2.2				
42100182 (07)	112.3 931A Ovary T	112.3 931A Ovary T	C119 Brain F	422H0610	608	1350	4.2	60	2.3	60	2.3				
42100182 (07)	111.9 265A Ovary Tumor	111.9 265A Ovary Tumor	C15 Heart F	422H0624	2964	1080	13.6	67	3.5	67	3.5				
42100182 (07)	111.8 266A Ovary Tumor	111.8 266A Ovary Tumor	S77 Ovary N	422H0603	1550	847	7.0	58	2.1	58	2.1				
42100182 (07)	111.5 262A Ovary T	111.5 262A Ovary T	144A Large Intestine	422H0622	2549	1651	13.2	71	3.2	71	3.2				
42100182 (07)	111.4 386A Ovary T	111.4 386A Ovary T	S10 PHAC Tactival	422H0605	534	748	3.9	62	2.2	62	2.2				
42100182 (07)	111.3 288A Ovary Tumor	111.3 288A Ovary Tumor	C112 Lung N	422H0625	893	1120	5.3	66	3.1	66	3.1				
42100182 (07)	111.3 435A Ovary Tumor	111.3 435A Ovary Tumor	S7 Ovary N	422H0626	440	567	3.3	60	2.2	60	2.2				
42100182 (07)	111.2 948A Ovary T (SCT)	111.2 948A Ovary T (SCT)	918S Ovary T (SCT)	422H0602	4188	3529	21.6	66	9.5	66	9.5				
42100182 (07)	111.1 428A Ovary T (met)	111.1 428A Ovary T (met)	213A Esophagus N	422H0612	725	689	6.2	65	2.8	65	2.8				
42100182 (07)	111.0 201A Ovary Tumor	111.0 201A Ovary Tumor	S6 Stomach F	422H0620	1008	1018	7.4	62	3.2	62	3.2				

FIG. 12

Gene Name	Bal Probe 1		Probe 2		GEM ID	Probe1		Probe2	
	Exp Name	P1	P2 Name	P2		Value	S/B	Value	S/B
421V00189 (D1)	11.2 426A Ovary T (met)	11.2 426A Ovary T (met)	415A Aorta N	422X0611	8072	243	55.2	243	2.4
421V00189 (D1)	11.7 523A Ovary Tumor	11.7 523A Ovary Tumor	556 Spinal Cord N	42240628	7367	537	42.6	537	2.5
421V00189 (D1)	12.6 429A Ovary T (met)	12.6 429A Ovary T (met)	464A Ovary N	42210614	2850	227	21.7	227	3.5
421V00189 (D1)	18.0 485A Ovary T	18.0 485A Ovary T	S91 Fetal tissue	422X0607	11711	1469	51.0	1469	2.2
421V00189 (D1)	17.3 261A Ovary Tumor	17.3 261A Ovary Tumor	S71 Breast N	42210623	6949	952	37.8	952	2.6
421V00189 (D1)	5.8 525 Ovary Tumor	5.8 525 Ovary Tumor	C14 Bone Marrow	42210619	208	1210	2.1	1210	2.9
421V00189 (D1)	15.0 205A Ovary T	15.0 205A Ovary T	270A Liver H	42200606	8676	1737	52.3	1737	2.6
421V00189 (D1)	14.5 483A Ovary T (met)	14.5 483A Ovary T (met)	11 Colon N	42210609	3149	707	17.4	707	2.0
421V00189 (D1)	14.4 261A Ovary Tumor	14.4 261A Ovary Tumor	S10 Scleral touch	42210621	6332	1413	29.1	1413	2.9
421V00189 (D1)	14.2 261A Ovary Tumor	14.2 261A Ovary Tumor	S22 Pancreas H	42200609	7612	1809	38.1	1809	3.3
421V00189 (D1)	3.2 482A Ovary T	3.2 482A Ovary T	C19 Brain H	42200610	408	1508	3.4	1508	2.3
421V00189 (D1)	19.9 9311 Ovary T (SCH)	19.9 9311 Ovary T (SCH)	P1 Skin H	42200601	2500	860	12.3	860	2.1
421V00189 (D1)	12.5 5115 Ovary T (met)	12.5 5115 Ovary T (met)	C110 Small intestine	42200601	1424	569	6.7	569	2.1
421V00189 (D1)	19.4 265A Ovary Tumor	19.4 265A Ovary Tumor	C15 Heart H	42200604	1742	723	11.8	723	2.8
421V00189 (D1)	12.1 481A Ovary T (met)	12.1 481A Ovary T (met)	272A Endothelial cells	42210608	1083	1342	17.0	1342	2.0
421V00189 (D1)	11.9 266A Ovary T	11.9 266A Ovary T	S22 Ovary H	42200603	1370	742	8.0	742	2.0
421V00189 (D1)	19.4 486A Ovary T	19.4 486A Ovary T	S40 PANC Cystic	42200605	307	580	2.6	580	2.0
421V00189 (D1)	11.7 262A Ovary Tumor	11.7 262A Ovary Tumor	34A Large Intestine	422A0622	2097	1202	11.2	1202	2.7
421V00189 (D1)	1.3 435A Ovary Tumor	1.3 435A Ovary Tumor	S7 Ovary H	42220626	373	470	2.9	470	2.0
421V00189 (D1)	11.1 288A Ovary Tumor	11.1 288A Ovary Tumor	C112 Lung H	422X0625	969	1094	5.6	1094	2.9
421V00189 (D1)	11.1 201A Ovary Tumor	11.1 201A Ovary Tumor	S6 Stomach H	422V0630	750	672	5.6	672	2.4
421V00189 (D1)	11.1 428A Ovary T (met)	11.1 428A Ovary T (met)	243A Esophagus H	42210612	498	446	4.2	446	2.1
421V00189 (D1)	1.0 9485 LP Ovary T (G)	1.0 9485 LP Ovary T (G)	9485 S P Ovary T (G)	422Y0602	3117	3174	16.7	3174	8.2
421V00189 (D1)	S22 Ovary Tumor	S22 Ovary Tumor	C19 Kidney N	42290627	224	409	2.3	409	2.3

FIG. 13

53

Gene Name	Exp Name	Probe 1	Probe 2	Probe 3	Gene ID	Probe1 Value	Probe2 Value	Probe1 S/B	Probe1 A%	Probe2 S/B	Probe2 A%
421100187 (E11)	420.2 426A Ovary T (met)	415A Aorta N	422X0611	415A Aorta N	422X0611	5441	270	36.3	50	2.3	50
421100187 (E11)	100.0 S21 Ovary Tumor	556 Sigmoid Col N	422C0628	556 Sigmoid Col N	422C0628	5118	533	27.1	56	2.3	56
421100187 (E11)	46.3 499A Ovary T (met)	361A Ovary F1	42200614	361A Ovary F1	42200614	1252	150	10.1	58	2.5	58
421100187 (E11)	15.7 855A Ovary T	591 Fetal tissue	422X0607	591 Fetal tissue	422X0607	9507	1668	35.8	45	2.1	45
421100187 (E11)	14.4 705A Ovary T	270A Liver N	422Q0606	270A Liver N	422Q0606	5456	1245	31.1	50	2.0	50
421100187 (E11)	14.2 765A Ovary Tumor	CT5 Heart F1	422Q0624	CT5 Heart F1	422Q0624	1844	438	11.9	48	2.0	48
421100187 (E11)	4.1 829A Ovary T	CT19 Heart N	422Q0610	CT19 Heart N	422Q0610	309	1259	2.6	48	2.0	48
421100187 (E11)	11.6 761A Ovary Tumor	510 Skeletal muscle	422Q0621	510 Skeletal muscle	422Q0621	3731	1036	17.7	55	2.3	55
421100187 (E11)	11.4 761A Ovary Tumor	57A Heart F1	42210624	57A Heart F1	42210624	4163	1249	21.0	62	3.0	62
421100187 (E11)	11.5 5115 Ovary T (met)	CT10 Small intestine	422Q0601	CT10 Small intestine	422Q0601	1565	627	8.8	47	2.1	47
421100187 (E11)	11.1 761A Ovary Tumor	S2 Pancreas F1	422Q0629	S2 Pancreas F1	422Q0629	3455	1640	14.9	60	3.0	60
421100187 (E11)	11.1 851A Ovary T (met)	CT19 Endocrine cell	422Q0608	CT19 Endocrine cell	422Q0608	2667	1270	13.4	44	1.9	44
421100187 (E11)	11.1 577 Ovary Tumor	CT19 Kidney F1	422Q0627	CT19 Kidney F1	422Q0627	291	605	2.4	51	2.5	51
421100187 (E11)	11.1 866A Ovary T	S10 PHM1 (activated)	42210605	S10 PHM1 (activated)	42210605	400	687	3.2	47	2.0	47
421100187 (E11)	11.6 916A Ovary T (SCH)	CT5 Skin N	42210601	CT5 Skin N	42210601	1622	984	7.9	44	2.2	44
421100187 (E11)	11.5 762A Ovary Tumor	134A Large Intestine	422X0622	134A Large Intestine	422X0622	1892	1245	10.1	50	2.6	50
421100187 (E11)	11.5 288A Ovary Tumor	CT12 Lung F1	422Y0625	CT12 Lung F1	422Y0625	604	908	4.1	62	2.6	62
421100187 (E11)	11.4 478A Ovary T (met)	214A Esophagus N	42210612	214A Esophagus N	42210612	246	325	2.7	78	1.9	78
421100187 (E11)	11.3 335A Ovary Tumor	S7 Ovary N	42210626	S7 Ovary N	42210626	382	501	2.9	58	2.0	58
421100187 (E11)	11.2 201A Ovary Tumor	S6 Stomach N	422W0620	S6 Stomach N	422W0620	558	677	4.2	58	2.3	58
421100187 (E11)	11.0 9185 1 P Ovary T (S)	9485 5 P Ovary T (S)	422Y0602	9485 5 P Ovary T (S)	422Y0602	2582	2493	15.1	57	6.3	57
421100187 (E11)	11.0 9185 1 P Ovary T (S)	11 Colon F1	422H0609	11 Colon F1	422H0609	2261	562	12.5	38	1.7	38
421100187 (E11)	11.0 9185 1 P Ovary T (S)	S27 Ovary N	42250603	S27 Ovary N	42250603	1739	965	9.7	36	2.2	36
421100187 (E11)	11.0 9185 1 P Ovary T (S)	CT1 Bone Marrow	42210619	CT1 Bone Marrow	42210619	283	845	2.2	44	2.2	44

FIG. 14

11721-1

ACGGTTTCAATGGACACTTTTATTGTTTACTTAATGGATCATCAATTTTGTCTCACTACCTA
CAAATGGAATTTTCATCTTGTTCATGCTGAGTAGTGAAACAGTGACAAAGCTAATCATAA
TAACCTACATCAAAAAGAGAACTAAGCTAACACTGCTCACTTTCTTTTAAACAGGCAAAAATA
TAAATATATGCACTCTAXAATGCACAATGGTTTAGTCACTAAAAAATCAAATGGGATCTT
GAAGAATGTATGCAAAATCCAGGGTGCAGTGAAGATGAGCTGAGATGCTGTGCAACTGTTT
AAGGGTTCTGGCACTGCATCTCTGGCCACTAGCTGAATCTTGACATGGAAGGTTTTAGC
TAAFGCCAAAGTGGAGATGCAGAAAATGCTAAGTTGACTTAGGGGCTGTGCACAGGAAGCTA
AAAGGCAGGAAAGTACTAAATATTGCTGAGAGCATCCACCCAGGAAGGACTTTACCTTC
CAGGAGCTCCAAACTGGCACCCACCCAGTGCTCACATGGCTGACTTTATCCTCCGTGTTT
CATTTGGCACAGCAAGTGGCAGTG

11721-2

AAGGCTGGTGGGTTTTTGATCCTGCTGGAGAACCCTCCGCTTTCATGTGGAGGAAGAAGGG
AAGGGAAAAGATGCTTCTGGGAACAAGGTTAAAGCCGAGCCAGCCAAAAATAGAAGCTTTC
CGAGCTTCACTTTCCAAGCTAGGGGATGTCTATGTCAATGATGCTTTTGGCACTGCTCACA
GAGCCACAGCTCCATGGTAGGAGTCAATCTGCCACAGAAGGCTGGTGGGTTTTTGATGA
AGAAGGAGCTGAACACTTTGCAAAAGGCTTGGAGAGCCAGAGCGACCCCTTCTGGCCA
TCCTGGGCGGAGCTAAAGTTGCAGACAAGATCCAGCTCATCAATAATATGCTGGACAAAG
TCAATGAGATGATTATTGGTGGTGGAAATGGCTTTTACCTTCCTTAAGGTGCTCAACAACAT
GGAGATTGGCACTTCTCTGTTTGAAGAGGGAGCCAAGATTGTCAAAGACCTAATGTCC
AAAGCTGACAAGAATGGTGTGAAGATTACCTTGCTGTTGACTTTGTCACTGCTGACAAGT
TTGATGA

11721-1

TTTGTTCCTTACATTTTCTAAAGAGTTACTTAAATCAGTCAACTGGTCTTTGAGACTCTTA
AGTTCTGATTCACACTTAGCTAATTCATTCTGAGAACTGTGGTATAGGTGGCGTGTCTTTC
TAGCTGGGACAAAAGTTCTTTGTTTCCCTCTGAGAGTATCACAGACCTTCTGTGAAGC
TGGACCTCTGTCTGGCCCTTGGACTCCCAATCTGCTTGTATGTTCAAGCCTGGAAATGTT
AATCTTTAATTTCCATAATGGATGGACATCTGTCTAAGTTGATCCTTTAGAACACTGCAAT
TATCTTCTTTGAGTCTAATTTCTTCTCTTCTTCTTGAATCGCATCACTAAACTTCTCTCCC
ATTCTTAGCTTCACTATACCCCTGTACCGATCATCTGGAGGGAAGACATGCTCTTAGTA
AAGGCTGCAAGCTGGGTGACAGTACTGTCCAAGTTTCTGAAGTTGCTGAACCTTCTGT
CTTTCTTGTTCAAAGTAACCTGAATCTCTCCAATTGTCTCTTCCAAGTGGACTTTTTCTCTGC
GCAAAGCATCCAG

11721-2

TCATTGCCCTGTGATGGCATCTCGAATGTGATGACCAGCCACGAAGTTGTAGATTTCATTCA
ATCAAAGGATTACCATGTGGTGGAAAGCTGTGAGGCAAGAGAAACAAGAACTGTATGGCA
AGTTAAGAAGCACAGAGGCAAAACAAGAGGACACAGAAAAGCAGTTGCAGGAAGCTGAG
CAAGAAATCGAGGAAATGAAGAGAAAGATGAGAAAGTTTGTCTAAATCTAAACAGCAGAA
AATCCTAGAGCTGGAAGAAGAGAATGACCCGCTTAGGGCAGAGGTGCACCTTGCAGGAG
ATACAGCTAAAGAGTGTATGGAACACTTCTTTCTTCCAATGCCAGCATGAAGGAAGAAC
TTGAAAGGGTCAAAATGGAGTATGAAACCCCTTCTAAGAAGTTTCACTCTTTAATGTCTGA
GAAAGACTCTCTAAGTGAAGAGCTTCAAGATTTAAAGCATCAGATAGAAGGTAATGTATC
TAAACAAGCTAACCTAGAGGCCACCGAGAAACATGATAAACCACGAATGTCACTGAAGA
GGGAACACAGTCTATACCAGGT

FIG. 15A

35

Abstract

44

CAAGCTTTTTTTTTTTTTTAAAAAGTGTTAGCATTAAATGTTTTATTGTCACGCAGATGGCA
ACTGGGTTTATGCTTTCATATTTTATTTTTGTAAATTAACAAAATTACAAGTTTTAAATA
GCCAATGGCTGGTTATATTTTCAGAAAACATGATTAGACTAATTCATTAAATGGTGGCTTCA
AGCTTTTCCTTATTGGCTCCAGAAAAATCACCCACCTTTTGTCCTTCTTAAAAAACTGGAA
TGTTGGCATGCATTTGACTTCACACTCTGAAGCAACATCCTGACAGTCATCCACATCTACTT
CAAGGAATATCACGTTGGAATACTTTTCAGAGAGGGAATGAAAGAAAGGCTTGATCATTT
TGCAAGGCCCCACACCAGTGGCTGAGAAGTCAACTACTACAAGTTTATCACCTGCAGCGTC
CAAGGCTTCCTGAAAAGCAGCTCTGGCTCTCGATCTGCTTACCATCTTGGCTGCTGGAGTCT
GACGAGCGGCTGTAAAGGACCGATGCAAAATGGATCCAAAGCACCAAAACAGAGCTTCAAGA
CTCGCTGCTTGGCTTGAATTCGATCCGATATCGCCATGGCCT

AAGTGTTAGCATTAAATGTTTTATTGTCACGCAGATGGCAACTGGCTTTATGTCTTCATAATT
TATATTTTTGTAATAAAAAAAATMCAAGTTTTAAATAGCCAATGGCTGGTTATATTTTC
AGAAAACATGATTAGACTAATTCATTAATGOTGGCTTCAAGCTTTTCTTATTGGCTCCAG
AAAATTCACCCACCTTTTGCCCTTCTAAAAAACTGGAATGTTGGCATGCCATTTGACTTCA
CACTCTGAAGCAACATCCTGACAGTCATCCACATCTACTTCAAGGAATATCAGTTTGAAT
ACTTTTCAGAGACGGAAATGAAGAAGCGCTTGATCATTTTGCAAGGCCACACCACGTGG
CTGAGAAGTCAACTACTACAAGTTTATCACCTGCAGCGTCCAAGGCTTCTGAAAAGCAGT
CTTGCTCTCGATCTGCTTACCATCTTGGCTGCTGGAGTCTGACGAGCGGCTGTAAAGGACC
GATCGAAAATGGATCCAAAGCACCAACAGAGCTTCAAGACTCGCTGCTTGGCATGAATTC
GGATCCGA

36

11723.1.40.19.19

TACAAACTTTTATTGAAACGCACACGCGCACACACACAAACACCCCTGTGGATAGGGAAAA
GCACCTGGCCACAGGGTCCACTGAAACGGGGAGGGGATGGCAGCTTGTAATGTGGCTTTT
GCCACAACCCCTTCTGACAGGGAAGGCCTTAGATTGAGGCCCCACCTCCCATGGTGATGG
GGAGCTCAGAAATGGGGTCCAGGGAGAATTTGGTTAGGGGGAGGTGCTAGGGAGGCATGA
GCAGAGGGCACCCTCCGAGTGGGGTCCCGAGGGCTGCAGAGTCTTCAGTACTGTCCCTCAC
AGCAGCTGTCTCAAGGCTGGGTCCCTCAAAGGGGGCTCCAGCGCGGGGCTCCCTGCGC
AAACACTTGGTACCCCTGGCTGCGCAGCGGAAGCCAGCAGGACAGCAGTGGCGCCGATCA
GCACAACAGACGCCCTGGCGGTAGGGACAGCAGGCCCAGCCCTGTGCGTTGTCTCGGCAG
CAGGTCTGGTTATCATGGCAGAAGTGTCTTCCCACACTTCACGTCCTTCACACCCACGTG
AXGGCTACXGGCCAGGAAG

11723.2.40.19.19

CCCGTGGGTGCCATCCACGGAGTTGTTACCTGATCTTTGGAAGCAGGATCGCCCGTCTGCA
CTGCAGTGGAAGCCCCGTGGGCAGCAGTGATGGCCATCCCCGCATGCCACGGCCTCTGGG
AAGGGGCAGCAACTGGAAGTCCCTGAGACGGTAAAGATGCAGGAGTGGCCGGCAGAGCA
GTGGGCATCAACCTGGCAGGGGCCACCCAGATGCCTGCTCAGTGTGTGGGCCATTTGTCC
AGAAGGGGACGGCAGCAGCTGTAGCTGGCTCCTCCGGGGTCCAGGCAGCAGGCCACAGGG
CAGAACTGACCATCTGGGCACCGCGTTCAGCCACCAGCCCTGCTGTTAAGGCCACCCAGC
TCACCAGGGTCCACATGGTCTGCTTCCCTCCGACTCCGCGGTCTTGGGCCCTGATGGTTC
TACCTGCTGTGAGCTGCCCCAGTGGGAAGTATGGCTGCTGCCAATGCCCAACGCCACCTGCT
GCTCCGATCACCTGCACTGCTGCCCAAGACACTGTGTGTGACCTGATCCAGAGTAAGTGC
CTCTCCAAGGAGAACG

11730-1

GAATCACCTTTCTGGTTTAGCTAGTACTTTGTACAGAACAAATGAGGTTTCCCACAGCGGAG
TCTCCCTGGGCTCTGTTTGGCTCTCGGTAAGGCAGGCCTACACCTTTTCTCTCTCTATGG
AGAGGGGAATATGCCATTAAAGGTGAAGAGTCACTTCCAAAAGTGAGAAAGGGATTGATT
GCTGCTTCAGGACTGTGGAAATTTTGAATGTTTTACAAATGGTTGCTACAAAACAAACAA
AAAAGGTAATTACAAAATGTGTACATCACAACATGCTTTTAAAGACATTATGCATTGTGC
TCACATTCCTTAAATGTTTGTTCCTAAAGGTGCTCAGCCTCTAGCCCAGCTGGATTCTCCGG
GAAGAGGCAGAGACAGTTTCCCCAAAAGACACAGGGAAGGAGGGGGTGGTGAAAGGA
GAAAGCAGCCTTCCAGTTAAAGATCAGCCCTCAGTTAAAGGTGAGCTTCCCGCAXGCTGGC
CTCAXGCGGAGTCTGGGTCAGAGGGACGAGCAGCAGGAGGTTGGGACTGGGGCGT

11730-2

AACCGGAGCGCGAGCAGTAGCTGCGTGGCCACCATGGCTGGGATCACCACCATCGAGGCG
GTGAAGCGCAAGATCCAGCTTCTGCAGCAGCAGGCAGATGATGCAGAGGAGCGAGCTGA
GCGCCTCCAGCGAGAAGTTGAGCGAGAAAGCGCGGCGCGGGAACAGGCTGAGGCTGAGG
TGGCCTCCTTGAACCGTAGGATCCAGCTGGTTGAAGAAGAGCTGGACCGTGCTCAGGAGC
GCCTGGCCACTGCCCTGCCAAAAGCTGGAAGAAGCTGAAAAAGCTGCTGATGAGAGTGAGA
GAGGTATGAAGGTTATTGAAAACCGGGCCTTAAAGATGAAGAAAAGATGGAAGTCCAG
GAAATCCAACCTCAAAGAAGCTAAGCACATTGCAGAAGAGGCAGATAGGAAGTATGAAGA
GGTGGCTCGTAAGTTGGTGATCATTCAGGAGACTTGGAAACGCACAGAGGAACGAGCTGA
GCTGGCAGAGTCCCGTGGCGAGAGATGGATGAGCAGATTAGACTGATGGACCAGAACCT
GAAGTGTCTGAGTGC

FIG. 15C

11732.1contig

GAGAACTTGGCCTTTATTGTGGGCCCAGGAGGGGCACAAAGGTCAGGAGGCCCAAGGGAGG
GATCTGGTTTTCTGGATAGCCAGGTATAGCATGGGTATCAGTAGGAATCCGCTGTAGCTG
CACAGGCCTCACTTGGCTGCAGTTCCGGGGAGAACACCTGCACTGCATGGCGTTGATGACCT
CGTGGTACACGACAGAGCCATTGGTGCAGTGCAAGGGGCACGGCATGGGCTCCGTCTCTCG
AGGGCAGGCAGCAGGAGCATTGCTCCTGCACATCCTCGATGTCAATGGAGTACACAGCTT
TGCTGGCACACTTTCCCTGGCAGTAATGAATGTCCACTTCTCTTGGGACTTACAATCTCCC
ACTTTGATGTAAGTGCACCTTGGCTGTGATGTCTTTGCAATCAGGCTCCTCACATGTGTCA
GCAGGTGCCTGGAAATTTTACGATTTTGCCTCCTTCAGCCAGACACTTGTGTTTCAATAATG
GTGGGCAGCCCGTGACCCCTCTTCTCCCAGATGTACTCTCTCT

11732.2contig

GCCTGGACCTTGGCGGATCAGTGCCACACAOTGACTTGCTTGGCAAATGGCCAGACCTTGC
TGCAGAGTCATCGTGTCAATTGTGACCATGGACCCCGGCTTCATGTGCCAACAGCCAGTC
TCCTGTTCCGGTGGAGGAGACGTGTGGCTGCCGCTGGACCTGCCCTTGTGTGTGCACGGGC
AGTTCCACTCGGCACATCGTCACTTCGATGGGCAGAAATTTCAAGCTTACTGGTAGCTGCT
CCTATGTCATCTTTCAAAACAAGGAGCAGGACCTGGAAGTGCTCCTCCACAATGGGGCCTG
CAGCCCCGGGGCAAAACAAGCCTGCATGAAGTCCATTGAGATTAAGCATGCTGGCGTCTC
TGCTGAGCTGCACAGTAACATCGAGATGGCAGTGGATGGGAGACTGGTCCTTGGCCCGTA
CGTTGGTGAAAACATGGAAGTCAGCACTTACGGCGCTATCATGTATGAAGTCAGGTTTACC
CATCTTGGCCACATCCTCACATACACCGCCCAAAACAACGAGTT

11735-1-2

AGATCAACCTCTGCTGCTCAGGAGGAATGCCCTTCTTGTCTTGGATCTTTGCTTTGACGTTT
TCGATAGTRWCACTKKRYTSRAMSKMAAGKGYRATGRWMITKSYWGWRSYKTMWWM
RSGRARAYTTAGCAYCCCMCCCTWAGCGSAGKACCARGTGCAAGGTGGACTCTTTCTG
GATGTTGTAGTCAGACAGGGGTGGGTCATCTTCCAGCTGTTTCCCAGCAAAAGATCAACCTC
TGCTGATCAGGAGGGATGCCCTTCTTATCTTGGATCTTTGCCCTTGACATTCTCGATGGTGT
ACTGGGCTCCACCTCGAGGGTGAAGGTCTTACCAGTCAGGGTCTTCACGAAGATYTGCATC
CCACCTCTGAGACGGAGCAGCAGGTGCAGGGTTCAGTCTTCTGGATGTTGTAGTCAGACA
GGGTGGCYCCATCTTCCAGCTCTTCCSAGCAAAAGATCAACCTCTGCTGGTCAAGGAGGRAT
GCCTTCTTGTCTGATCTTTCCYTTGACRTTCTCRATGGTGTCACTCGGCTCCACTTCGA
GAGTGATGGTCTTACCAGTCAGGGTCTTCACGAAGATCTGCATCCCACCTCTAA

11740.2.contig

AAGTCACAAACAGACAAAGATTATACCAGCTGCAAGCTATATTAGAAGCTGAACGAAGA
GACAGAGCTCATGATTCTGAGATGATTGACAGCTTCAAGCTCGAATTACATCTTTACAAG
AGGAGGTGAAGCATCTCAAAACATAATCTCGAAAAAGTGAAGGAGAAAGAAAAGAGGCT
CAGACATGCTTAATCACTCAGAAAAGGAAAAGAATAATTTAGAGATAGATTTAAACTAC
AAACTTAAATCATTACAACAACGGTTAGAACAAGAGGTAAATGAACACAAAGTAACCAAA
CCTCGTTTAACTGACAAACATCAATCTATTGAAGAGGCAAGTCTGTGGCAATGTGTGAG
ATGGAAAAAAGCTGAAGAAGAAAGAGAGCTCGAGAGAAGGCTGAAAATCGGGTTGT
TCAGATTGAGAAACAGTGTTCATGCTAGACGTTGATCTGAAGCAATCTCAGCAGAAACT
AGAACAATTTGACTGGAATAAAGCAAGCATGGACGATGAAGTTAAGAATCTA

FIG. 15D

11765.2&64.2.contig

CGCCTCCACCATGTCCATCAGGGTGACCCAGAAAGTCCTACAAGGTGTCCACCTCTGGCCCC
CGGGCCTTCAGCAGCCGCTCCTACAGAGTGGGCCCCGGTTCCCGCATCAGCTCCTCGAGCT
TCTCCCGAGTGGGCAGCAGCAACTTTCGGCGTGGCCTGGGCGGCGGCTATGGTGGGGCCA
GCGGCATGGGAGGCATACCCGAGTTACGGTCAACCAGAGCCTGCTGAGCCCCCTTGTCT
GGAGGTGGACCCCAACATCCAGGCCGTGCGCACCCAGGAGAAGGAGCAGATCAAGACCCT
CAACAACAAGTTTGCCTCCTTCATAGACAAGGTACGGTTCTGGAGCAGCAGAACAAAGAT
GCTGGAGACCAAGTGGAGCCTCCTGCAGCAGCAGAAGACGGCTCGAAGCAACATGGACA
ACATGTTTCGAGAGCTACATCAACARCCTTAGGCGGCAGCTGGAGACTCTGGGCCAGGAGA
AGCTGAAGCTGGAGGCGGAGCTTGGCAACATGCAGGGGCTGGTGGAGGACTTCAAGAAC
AAGTATGAGGATGAGATCAATAAGCGTACAGAGATGGAGAACGAATTTGTCTCATCAAG
AAGGATGTGGATGAAGCTTACATGAACAAGGTAGAGCTGGAGTCTCGCCTGGAAGGGCTG
ACCGACGAGATCAACTTCTCAGGCAGCTGTATGAAGAGGAGATCCGGGAGCTGCAGTCC
CAGATCTCGGACACATCTGTGGTCTGTCCATGGACAACAGCCGCTCCCTGGACATGGACA
GCATCATTGCTGAGGTCAAGGCACAGTACGAGGATATTGCCAACCGCAGCCGGGCTGAGG
CTGAGAGCATGTACCAGGTCAAGTATGAGGAGCTGCAGAGCCTGGCTGGGAAGCACGGGG
ATGACCTGCGGCGCACAAAGACTGAGATCTCTGAGATGAACCCGGAACATCAGCCCGGT
XCAGGCTGAGATTGAGGGCCTCAAAGGCCAGAXGGCTTXCCTGGAXGXCCGCCAT

11767.2.contig

CCCGGAGCCAGCCAAACGAGCGGAAAATGGCAGACAATTTTCGCTCCATGATGCGTTATCT
GGGTCTGGAAACCCAAACCTCAAGGATGGCCTGGCGCATGGGCGAACCAGCCTGCTGGG
GCAGGGGGCTACCCAGCGGCTTCTATCTCTGGGCGCTACCCCGGGCAGCCACCCCAAGG
GCTTATCTCTGGACAGGCACCTCCAGGGCGCTACCTGGAGCACCTGGAGCTTATCCCGGAG
CACCTGCACCTGGAGTCTACCCAGGGCCACCCAGCGGCCCTGGGGCCTACCCATCTTCTGG
ACAGCCAAGTGGCACCGGAGCCTACCTGGCACTGGCCCCCTATGGCGCCCCTGCTGGGGCA
CTGATTGTGCTTATAACCTGCCTTGGCTGGGGAGTGGTGCCTCGCATGCTGATAACAA
TTCTGGGCACGGTGAAGCCCAATCCAAACAGAAATGCTTTAGATTTCCAAAGAGGGAATG
ATGTTGCCCTTCCACTTAAACCCAGCCTTCAATGAGAACAACAGGAGAGTCATTGGTTGCAA
TACAAAGCTGGATAA

11768-1&2

GGGAATGCAACAACCTTTATTGAAAGGAAAGTGCATGAAATTTGTTGAAACCTTAAAAGG
GGAACTTAGACACCCCCCTCRA₂CGMAGKACCARGTGCA₂GTGGACTCTTTCTGGAT
GTTGTAGTCAGACAGGGTRCGWCCATCTTCCAGCTGTTTTCCRGCAAGATCAACCTCTGC
TGATCAGGAGGRATGCCCTTCTTATCTTCGATCTTTGCCCTTGACATTCTCGATGGTGTCACT
GGCCTCCACCTCGAGGGTGATGGTCTTACCAGTCAGGGTCTTACGAAGATYTGCATCCCA
CCTCTGAGACCGAGCACCAAGGTCCAGGGTRGACTCTTTCTGCATGTTGTAGTCAGACAGG
GTGCGYCCATCTTCCAGCTG₂TTTCCS₂CCAAAGATCAACCTCTGCTGGTCAGGAGGRATGC
CTTCTTGTCTTGGATCTTTGCTTTCACRTTCTCAATGGTGTCACTCGGCTCCACTTCGAGA
GTGATGGTCTTACCAGTCAGGGTCTTCAAGCAAGATCTGCATCCCACCTCTAAGACGGAGCA
C₂FAGGTGCAGGGTGGACTCTTCTGCA₂T₂TTGTAGTCAGACAGGGTCCGTCCATCTTCCA
GCTGTTTCCCAGCAAGATCAACCT

FIG. 15E

34

11768-1&2-11735-1&2

AGGTTGATCTTTGCTGGGAAACAGCTGGAAGATGGACGCACCTGTCTGACTACAAcCATC
CAGAAAGAGTCCACCCTGCACCTGGTGTCTCGTCTTAGAGGTGGGATGCAGATCTTCGTGA
AGACCCTGACTGGTAAGACCATCACTCTCGAAGTGGAGCCGAGTGACACCATTGAGAAYG
TCAARGCAAAGATCCARGACAAGGAAGGCATYCCTCCTGACCAGCAGAGGTTGATCTTTG
CSGGAAAgCAGCTGGAAGATGGRCGCACCCTGTCTGACTACAACATCCAGAAAGAGTCYA
CCCTGCACCTGGTGTCTCGTCTCAGAGGTGGGATGCGARATCTTCGTGAAGACCCTGACTGG
TAAGACCATCACCCCTCGAGGTGGAGCCAGTGACACCATCGAGAATGTCAAGGCAAAGAT
CCAAGATAAGGAAGGCATCCCTCCTGATCAGCAGAGGTTGATCTTTGCTGGGAAACAGCT
GGAAGATGGACGCACCCCTGTCTGACTACAACATCCAGAAAGAGTCCACcTYTGCACYTGGT
MCTBCGcCTYgAGGGKGGGRTGc22aTCTWMGTKWagaCaCtC3CTKKYAAGRYyTCAMCMWt
gAKKTCgAKYSCASTKWC3CTWTCRAKAAMGTyrWWGCAWagaTCCMAGACAAGGAAGGC
ATTCTCCTGACCAGCAGAGGTTGATCT

11769.1.contig

ATGGAGTCTCACTCTGTGCGACCAGGCTGGAGCGCTGTGGTGGGATATCGGCTCACTGCAGT
CTCCACTTCCTGGGTTCAAGCGATCCTCCTGCCTCAGCCTCCCGAGTAGCTGGGACTACAG
GCAGGCGTCACCATAATTTTGTATTTTAGTAGAGACATGGTTTCGCCATGTTGGCTGGG
CTGGTCTCGAATCCTGACCTCAAGTGACTGTCTCCTGGCCTCCCAAGTGTGGGATTACA
GGCGAAAGCCAAACGCTCCCGGCCAGCGAACAACCTTAGAATGAAGGAAATATGCAAAAG
AACATCACATCAAGGATCAATTAATTACCATCTAATTAATTAATATATGTGGGTAATTAATGA
CTATTTCCCAAGCAATCTACGTTGACTGCTTGAGAAGATGTTTGTCTGCAATGGTGGAGAG
TGGAGAAGGGCCAGGATTCTTAGCTT

11769.2.contig

AGCGCGGTCTTCCGGCCGCGACAAAGCTGAAGGTGATGTGGCCGCCCTCAACCGACCGCATC
CAGCTCGTTGAGGAGGAGTTGGACAGGGCTCAGGAACGACTGGCCACGGCCCTGCAGAAG
CTGGAGGAGGCAGAAAAAGCTGCAGATGAGAGTGAGAGAGGAATGAAGGTGATAGAAAA
CCGGCCCATCAAGGATGACGAGAGATGGAGATTACAGGAGATGCAGCTCAAAGAGGCCA
AGCACATTGCGGAAGAGGCTGACCGCAATACGAGGAGGTAGCTCGTAACCTGGTCAATCC
TGGAGGGTGACCTGGAGACGGCCAGAGGAGCGTGGGAGGTGTCTGAACTAAAATGTGGT
GACCTGGAAGAAGAACTCAAGAATGTTACTAACAATCTGAAATCTCTGGAGGCTGCATCT
GAAAAGTATTCTGAAAAGGAGGACAAATATGAAGAAGAAATTAACCTTCTGTCTGACAAA
CTGAAAGAGGCTGAGACCCGTGCTGAATTTGCAGAGAGAAACGGTTGCAAAACTGGAAAAG
ACAATTGATGACCTGGAACAGAAACTTGGCCAGC

11770.1.contig

GTGCACAGGTCCCATTTATTGTAGAAAAATAATAATTACAGTGATGAATAGCTCTTCTT
AAATTACAAAACAGAAACCACAAAGAGGAAGAGGAAAAACCCAGGACTTCCAAGGGT
GAAGCTGTCCCTCCTCCTGCGACCTCCCAAGGCTCATTAGTGTCCTTGAAGGGGCAGA
GGACTCAGAGGGGATCAGTCTCCAGGGGGCTGGGCTGAAGCGGGTGAGGCAGAGAGTCC
TGAGGGCCACAGAGCTGGGCAACCTGAGCGGCTCTCTGGCCCCCTCCCCACCACTGCCCA
AACCTGTTTACAGCACCTTGGCCCCCTCCCTCTAAACCGTCCATCCACTCTGCACTTCCCA
GGCAGGTGGGTGGCCAGGCTCAGCCATACTCCTGGGCGGGGTTTCGGTGAGCAAGGC
ACAGTCCCAGAGGTGATATCAAGGCTT

FIG. 15F

11770.2.contig

GCAAGGAACTGGTCTGCTCACACTTGCTGGCTTGGCGATCAGGACTGGCTTTATCTCCTGA
 CTCACGGTGCAAAGGTGCACTCTGCGAACGTTAAGTCCGTCCCCAGCGCTTGGAATCCTAC
 GGGCCCCACAGCCGGATCCCCCTCAGCCTTCCAGGTCTCAACTCCCGTGGACGCTGAACAA
 TGGCCTCCATGGGGCTACAGGTAATGGGCATCGCGCTGGCCGTCTGGGCTGGCTGGCCGT
 CATGCTGTGCTGCGCGCTGCCCATGTGGCGCGTGACGGCCTTCATCGGCAGCAACATTGTC
 ACCTCGCAGACCATCTGGGAGGGCCTATGGATGAACTGCGTGGTGCAGAGCACCGGCCAG
 ATGCAGTGCAAGGTGTACGACTCGCTGCTGGCACTGCCGACGACCTGCAGGCGGCCCGC
 GCCCTCGTCATCATCA

11773.1.contig

TGCAAAAGGGACACAGGGGTTCAAAAATAAAAATTTCTTCTTCCCCCTCCCCAAACCTGTAC
 CCCAGCTCCCCGACCACAACCCCTTCTCTCCCCGGGAAAGCAAGAAGGAGCAGGTGTG
 GCATCTGCAGCTGGGAAGAGAGAGGCGGGGAGGTGCCGAGCTCGGTGCTGGTCTCTTTC
 CAAATATAAATACXTGTGTGCAACTGGAAAATCTCCAGCACCCACCACCCAAGCACTCT
 CCGTTTTCTGCCGGTGTGAGAGAGGGCGGGGGGAGGGGCGCCAGGCACCGGCTGGCT
 GCGGTCTACTGCACTCCGCTGGGTGTGCAACCCCGGAGCCTCTGCTGCTCATTGTAGAAGA
 GATGACACTCGGGGTCCCCCGGATGGTGGGGGCTCCCTGGATCAGCTTCCCGGTGTTGGG
 GTTCACACACCAGCACTCCCCACGCTGCCCGTTAGAGACATCTTGCCTGTTTGAGGTTG
 TACAGGCCATGCTTGTACAGTTG

11773.1.contig

GGGTTGGAGCGACTGGTTCTTTATTTCAAAAAGACACTTGTCAATATTCAGTATCAAAACA
 GTTGCCTATTGATTTCTCTTTCTCCCAATCGGCCCCAAAGAGACCACATAAAAAGGAGAGT
 ACATTTTAAGCCAATAAGGTGCGAGGATGTACACCTAACAGACCTCCTAGAAACCTTACCAG
 AAAATGGGACTGGGTAGGGAAGGAACTTAAAAGATCAACAACTGCCAGCCCCACGGA
 CTGCAGAGGCTGTACAGCCAGATGGGGTGGCCAGGGTCCACAAACCCAAAGCAAAAGTT
 TCAAAATAATATAAAAATTTAAAAAGTTTTGTACATAAGCTATTCAAGATTTCTCCAGCACT
 GACTGATACAAAGCACAAATTCAGATGGCACTTCTAGAGACAGCAGCTTCAAACCCAGAAA
 AGCGTGATGAGATGAGTTTCACATGGCTAAATCAGTGGCAAAAACACAGTCTTCTTTCTTT
 CTTTCTTTCAAGGAGCCAGCAAAAGCAAATTAAGTGGTCACCTCAACATAAGCGGGACATGA
 TCCATTCTGTAAGCAGTTGTGAAGGGC

11773-2&30-2

CAGGAACCGGAGCCCGACGAGTACCTGGGTGGGCACCATGGCTGGGATCACCACCATCGA
 GGCGGTGAAGCGCAAGATCCAGGTTCTGCACCACGAGCAGATGATGCAGAGGAGCGAG
 CTGAGCGCCTCCAGCGAGAAGTTGAGGGAGAAAGCGGGGCGCGGAACAGGCTGAGGCT
 GAGGTGGCCTCCTTGAACCGTAGGATCCAGCTGGTTGAAGAAGAGCTGGACCGTGCTCAG
 GAGCGCCTGGCCACTGCCCTGCCAAAAGCTGGAAGCAAGCTGAAAAAGCTGCTGATGAGAGT
 GAGAGAGGTATGAAGGTTATTGAAAACCGGCCCTTAAAAGATGAAGAAAAGATGGAAGT
 CCAGGAAATCCAACCTCAAAGAAGCTAACCACATTGCAGAAGAGGACAGATAGGAAGTATG
 AAGAGGTGGCTCGTAAGTTGGTGATCATTTGAACGAGACTTGAACGCACAGAGGAACGAG
 CTGACCTCGCAGACTCCCGTTGCCGAGAGATGGATGAGCAGATTAGACTGATGGACCAGA
 ACCTGAAGTGTCTGACTGC

FIG. 15G

11782.1.contig

ATCTACGTCATCAATCAGGCTGGAGACACCATGTTCAATCGAGCTAAGCTGCTCAATATTG
GCTTTCAAGAGGCCTTGAAGGACTATGATTACAACTGCTTTGTGTTCAGTGATGTGGACCT
CATTCCGATGGACGACCGTAATGCCTACAGGTGTTTTTCGCAGCCACGGCACATTTCTGTT
GCAATGGACAAGTTTCGGGTTTACGCTGCCATATGTTCAATTTTGGAGGTGTCTCTGCTCT
CAGTAAACAACAGTTTCTTGCCATCAATGGATTCCCTAATAATTATTGGGGTTGGGGAGGA
GAAGATGACGACATTTTAAACAGATTAGTTCATAAAGGCATGTCTATATCACGTCCAAATG
CTGTAGTAGGGAGGTGTGCAATGATCCGGCATTCAAGAGACAAGAAAAATGAGCCCAATC
CTCAGAGGTTTGACCGGATCGCACATACAAAGGAAACGATGCGCTTCGATGGTTTGAAC
CACTTACCTACAAGGTGTTGGATGTCAGAGATACCCGTTATATACCCAAATCAC

11782.2.contig

CTAGACCTCTAATTAAGGACACAATCATGCTGGAGAATGAACAGTCTGACCCCGAGGGC
CACAGCGAATTTTAGGGAAGGAGCCAAAGAGGTGAGAAGGGAAAGGAAAGGAAGG
AAGGAGAACAAATAAGAACTGGAGACGTTGGGTGGGTCAGGGAGTGTGGTGGAGGCTCGG
AGAGATGGTAAACAAACCTGACTGCTATGAGTTTTCAACCCCATAGTCTAGGGCCATGAG
GGCGTCAGTTCTTGGTGGCTGACGGTCTTCCACCCAGCCACCTGGGGGAGTGGAGTGG
GGAGTTCTGCCAGGTAAGCAGATGTTGTCTCCCAAGTTCTGACCCAGATGTCTGGCAGGA
TAACGCTGACCTGTTCCCTCAACAAGGGACCTGAAAGTAATTTTGCTCTTAC

11783-1 & 2

CCGAATTCAAGCGTCAACGAATCCCTGCGTTACCATCAAAATCAATTGGCCACCAATGGTACT
GAACCTACGAGTACACCGACTAGCGCGGACTAATCTTCAACTCTACATACTTCCCCCAT
TATTCCTAGAACCAGGCGACCTGCGACTGCTTGACGTTGACAATCGAGTAGTACTCCCGAT
TGAAGCCCCCATTCGTATAATAATTACATCACAAGACGCTTTCGACTCATGAGCTGTCCCC
ACATTAGGCTTAAAAACAGATGCAATTCGCGGACGCTAAGCCAAACCACCTTTCACCGCTA
CAGGACCGGGGGTATACTACCGTCAATCTCTGAAATCTGTGGAGCAAACCACAGTTTCAT
GCCCCATCGTCTAGAAATTAATTCGCTAAAAATCTTTGAAATAGGGCCCGTATTTACCCCTA
TAGCACCCCTCTACCCCTCTAG

11786.1.contig

GCTCTTCACACTTTTATTGTTAAATCTCTTCACATGGCAGATACAGAGCTGTGCTCTTGAAG
ACCACCACTGACCAGGAAATGGCACTTTTACAAAATCATCCCCCTTTTCATGATTGGAAC
AGTTTTCTGACCGTCTGGGAGCGTTGAAGCGTGACCAGCACATTTGCACATGCAAAAAA
GGAGTGACCCCAAGCGCTCAACCACTTCCAGAGCTCACCATGGGCTGCAGGTGACTT
GCCAGGTTTGGGGTTGCTGAGCTTTCTGCTGCTGCGGTGGGGAGGCCCTCAAGAACTGA
GAGGCCGGGGTATGCTTCATGAGTGTAAACATTTACGGGACAAAAGCGCATCATTAGGAT
AAGCAACAGCCACAGCACTTCATGCTTGTGAGGGTTAGCTGTAGGAGCGGGTGAAAGGAT
TCGAGTTTATGAAAAATTAAGCAAAACAACCGTTTTTACCTGGGTGGGAAACAGGAAAC
TGTGATGTCGGCCAATGACCACCAATTTCTGCCCATGTGAAGGTCCCCATGAAACC

FIG. 15H

11786.2.contig

CAAGCGCTTGGCGTTTGGACCCAGTTCACTGAGGTTCTTGGGTTTTGTGCCCTTTGGGGATTT
TGGTTTGACCCAGGGGTACGCTTAGGAAGGTCTTCAGGAGGAGGCCGAGTTCCCTTCAG
TACCACCCCTCTCTCCCCACTTTCCCTCTCCCGGCAACATCTCTGGGAATCAACAGCATATT
GACACGTTGGAGCCGAGCCTGAACATGCCCTCGGCCCCAGCACATGGAAAACCCCTTC
CTTGCTTAAGGTGTCTGAGTTTCTGGCTCTTGAGGCAATTCAGACTTGAAATTCTCATCAG
TCCATTGCTCTTGAGTCTTTCAGAGAACTCAGATCAGGTGCACCTGGGAGAAAAGACTTT
GTCCCCACTTACAGATCTATCTCTCCCTTGGGAAGGGCAGGGAATGGGGACGGTGTATGG
AGGGGAAGGGATCTCTCGGCCCTTCATTGCCACACTTGGTGGGACCATGAACATCTTTAG
TGTCTGAGCTTCTCAAATTACTGCAATAGGA

13691.1&2

AGCGTCAAAATCAGAATGGAAAAGACTCAAAATCCATCATCAACACCAAGATCAAAAGGAC
AAGRATCCTTCAAGAAACAGGAAAAAACTCCTAAAACACCAAAAGGACCTAGTTCTGTAG
AAGACATTAAAGCAAAAATGCAAGCAAGTATAGAAAAAGGTGGTTCTCTTCCCAAAGTGG
AAGCCAAATTCATCAATTATGTGAAGAAATGCTTCCGGATGACTGACCAAGAGGCTATTCA
AGATCTCTGGCAGTGGAGGAAGTCTCTTAAAGAAAAATAGTTTAAACAAATTTGTTAAAAAAT
TTCCGTCTTATTTCAATTTCTGTAACAGTTGATATCTGGCTGTCTTTTTATAATGCAGAGT
GAGAACTTTCCCTACCGTGTTTGATAAAATGTTGTCCAGGTTCTATTGCCAAGAATGTGTTGT
CCAAAATGCCTGTTTAGTTTTAAAGATGCAACTCCACCTTTGCTTGGTTTTAAGTATGTA
TGGAAATGTTATGATAGGACATAGTAGTACCGGTGGTCAGACATGGAAATGGTGGGSMGAC
AAAAATATACATGTGAAATAA

13692.1&2

TCCGAATTCGAAGCGAATTATGGACAAACGATTCTTTTAGAGGATTACTTTTTTCAATTTT
GGTTTTAGTAATCTAGGCTTTGCCGTGTAAGAATAACAACGATGGATTTTAAATACTGTTTG
TGGAAATGTGTTTAAAGGAATGATTCTACAACCTTTGTATATTTGATAGTATTTCTAATTTT
ATTTCTTTACTGTTTGCAGTTAAATGTTCAATGTTCTGCTATGCAATCGTTTATATGCACGTTT
TTTAAATTTTTTAGATTTTCTGGATGTATAGTTTAAACAACAAAAAGTCTATTTAAAACTG
TAGCAGTAGTTTACAGTTCTAGCAAAAGACGAAAGTTGTGGGGTTAAACTTTGTATTTTCTT
TCTTATAGAGGCTTCTAAAAAGGTATTTTTATATGTTCTTTTAAACAAATATTGTGTACAAC
CTTTAAACATCAAATGTTTGGATCAAAACAAGACCCAGCTTATTTTCTGC

13693.2

TGTGGTGGCGCGCCCTCAGGTGGAGGCCAGGACTCTGACCTTGGCCCTGCCTTCAGCAA
GGCCCCCGGAGCGCCGCCACTACGAACCTGCCGTGGGTTGAAAAATATAGGCCAGTAAA
GCTGAATGAAATTGTGGGAATCAAGACACCGTGAGCACGCTAGAGGTCTTTGCAAGGGA
AGGAAATGTGCCCACATCATCATTTGCGGCCCTCCAGGAACCGGCAAGACCACAAGCAT
TCTGTGCTTGGCCCCGGCCCTGCTGCCCCCAGCACTCAAAAGATGCCATGTTGGAACCTCAAT
GCTTCAAATGACAGGGCCATTGACGTTGTGAGGAATAAAATTTAAATGTTTGCTCAACAA
AAAGTCACTCTTCCCAAAGCCCCGACATAAGATCATCATTTCTGGATGAAGCAGACAGCATG
ACCGACGGAGCCAGCAAGCCTTGAGGAGAACCATGGAAATCTACTCTAAAACCACTCGT
TCGCCCTTGCTTGTAAATGCTTCGGATAAGATCATCGAGCC

13696.1-13744.1

CTTTGCAAAGCTTTTATTTTCATGTCTGCGGCATGGAATCCACCTGCACATGGCATCTTAGCT
GTGAAGGAGAAAAGCAGTGCACGAGAAGGAATGAGTGGGCGGAACCAACGGCCTCCACAA
GCTGCCTTCCAGCAGCCTGCCAAGGCCATGGCAGAGAGAGACTGCAAACAAACACAAGCA
AACAGAGTCTCTTCACAGCTGGAGTCTGAAAGCTCATAGTGGCATGTGTGAATCTGACAA
AATTAAGAGTGTGCATAGTCCATTACATGCATAAAACACTAATAATAATCCTGTTTACACG
TGACTGCAGCAGGCAGGTCCAGCTCCACCCTGCCCTCCTGCCACATCACATCAAGTGCCA
TGGTTTAGAGGGTTTTTCATATGTAATTTCTTTTATTCTGTAAAAGGTAACAAAATATACAG
AACAAAACCTTCCCTTTTTTAAACTAATGTTACAAATCTGTATTATCACTTGGATATAAAT
AGTATATAAGCTGATC

13700.1

CAAGGGATATATGTTGACGGTACRGRGTGA²ACTGAACAGATCACAAAGCACGAGAAACA
TTAGTTCTCTCCCTCCCCAGCGTCTCCTTCGTCTCCCTGGTTTTCCGATGTCCACAGAGTGA
GATTGTCCCTAAGTAACTGCATGATCAGAGTGCTGKCTTTATAAGACTCTTCATTACAGCGT
ATCCAATTACGCAATTGCTTCATCAAATGCCGTTTTTGCCAGGCTACAGGCCTTTTCAGGA
GAGTTTAGAATCTCATAGTAAAAGACTGAGAAATTTAGTGCCAGACCAAGACGAATTGGG
TGTGTAGGCTGCATTNCTTTCTTACTAATTTCAAATGCTTCCTGGTAAGCCTGCTGGGAGTT
CGACACAAGTGGTTTTGTTTGTCTCCAGATGCCACTTCAGAAAGATACCTAAAATAATCT
CCTTTCATTTTCAAAGTAGAAGAC

13700.2

TCCGGAGCCGGGGTAGTCCCGCCGGCCCGCCGGGTGCAGCCACTGCAGGCACCGCTGCC
CCCCCTCAGTAGTGGGCTTAGGAAGGAAGAGCGTCATCTCGCTCGGAGCTTCGCTCGGAA
GGGTCTTTGTTCCCTGCCAGCCCTCCACGGGAATGACAATGGATAAAAAGTGAGCTGGTACA
GAAAGCCAAACTCGCTGAGCAGGCTGAGCGATATGATGATATGGCTGCAGCCATGAAGGC
AGTCACAGAACAGGGGCA³GA⁴ACTCTCCAACGAAGAGAGAAATCTGCTCTCTGTTGCCTA
CAAGAATGTGGTAAGGGCCCGCCGGCTCTTCTGGCGTGTCTCTCCAGCATTGAGCAGA
AAACAGAGAGGAATGAGAAGAAGCAGCAGATGGGCAAGAGTACCGTGAGAAGATAGA
GGCAGAACTGCAGGACATCTCCAATGATGTTCTGCAGCTTGTGGACAAATATCTTATTCC
AATGCTACACAACCCAGAAA

13701.1

AAAAAGCAGCARGTTCAACACAAAATAGAAAATCTCAAATGTAGGATAGAACAAAACCAA
GTGTGTGAGCGCGGAAGCAACAGCAAAAGGAAGAAATGAGATGTTGCAAAAAAGATGGA
GGACGGTTCCCTCTCCTCTCGGGACTGACTCAAAACACTGATGTGGCAGTATACACCATTC
CAGAGTCACGGGTGTTCA⁵TTCTTTTGGGACTAAGAAAAGGTGGGGATTAAAGAAGACGT
TTCTGGAGGCTTAGGGACCAAGGCTGGTCTCTTTCCCCCTCCCAACCCCTTGATCCCTTT
CTCTGATCAGCGGAAAGGAGCTCGAATCAGGGCAGGTAGAGTTGGAAAGGGAAAGGATT
CACTTGACAGAATGGGACAGACTCCTTCCCA

FIG. 15J

13701.2

TGGCAATAGCACAGCCATCCAGGAGCTCTTCARGCGCATCTCGGAGCAGTTCACTGCCATG
TTCCGCCGGAAGGCCTTCCTCCACTGGTACACAGGCGAGGGCATGGACGAGATGGAGTTC
ACCGAGGCTGAGAGCAACATGAACGACCTCGTCTCTGAGTATCAAGCAGTACCAGGATGC
CACCGCAGAAGAGGAGGAGGATTTCCGGTGAGGAGGCCGAAGAGGAGGCCTAAGGCAGAG
CCCCATCACCTCAGGCTTCTCAGTTCCCTTAGCCGTCTTACTCAACTGCCCTTTCTCTCC
CTCAGAAATTTGTGTTTGCTGCCTCTATCTTGTGTTTTTCTTCTGCGGGGGTCTAGAA
CAGTGCTGGCACATAGTAGGCGCTCAATAAATACTTGGTTGNTGAATGTCTCCT

13702.2

AGCTGGCGCTAGGGCTCGGTTGTGAAATACAGCGTRGTCAGCCCTTGGCGCTCAGTGTAAGAA
ACCCACGCCTGTAAGGTCGGTCTTCGTCCATCTGCTTTTTTCTGAAATACACTAAGAGCAG
CCACAAAACTGTAACCTCAAGGAAACCATAAAGCTTGGAGTGCCTTAATTTTAAACCAGTT
TCCAATAAAACGGTTTACTACCT

13704.2-13740.2

GGAGATGAAGATGAGGAAGCTGAGTCAGCTACGGGCGCGGGCAGCTGAAGATGATGA
GGATGACGATGTGATACCAAGAACCAGAAAGACCGACGAGGATGACTAGACAGCAAAAA
AGGAAAAAGTTAAA

13706.1

GATGAAAATTAATACTTAAATTAATCAAAAGGCACTACGATACCACCTAAAACCTACTG
CCTCAGTGGCAGTAKGCTAAKGAACATCAAGCTACAGSACATYATCTAATAATGAATGTTA
GCAATTACATAKARGAAGCATGTTTCTTTCCAGAACTATGGNACAATGGTCAATTWG
GCCCCAAGAGGATATTTGCCCGGAAAGCATCAAGATAGATNAANGTAAAG

13706.2

GAGTAGCAACGCCAAAGCGCTTCGTATTGAGTCTGTGGGSGACTTCGGTTCCGGTCTCTGCA
GCAGCCGTGATCGCTTAGTGGAGTGCTTAGCGGTAGTTGGCCAGGATGCCGAATATCAAAA
TCTTCAGCAGGCAGCTCCCACCAGGACTTATCTCASAAAATTGCTGACCGCCTGGGCCTGG
AGCTACGCCAAGGTGGTGACTAAGAAAATTCAGCAACCAGGAGACCTGTGTGGAAATTGGTG
AAAGTGTACCGTGGAGAGGATGTCTACATTGTTTCTCAGAGTGGNTGTGGCGAAATCAATGAC
AATTTAATGGAGCTTTTGATCATGATTAATGCCTGCAAGATTGCTTCAGCCAGCCGGGTTA
CTGCAGTCATCCCATGCTTCCCTTATGCCCCGGCAGGATAAGAAAGATNAGAGCCGGGCC
GCCAATCTCAGCCAAGCTTGGTGCAAAATATGCTATCTGTAGCAGTGCAGATCATATTATCA
CGATGGACCTACATGCTTCTCAAAATTCANGGCTTTTT

FIG. 15K

13707.3

ATGCAAAAGGGGACACAGGGGGTTCAAAAATAAAAAATTTCTTCCCCCTCCCCAAACCT
GTACCCCAGCTCCCCGACCACAACCCCTTCTCCCCCGGGGAAAGCAAGAAGGAGCAGG
TGTGGCATCTGCAGCTGGGAAGAGAGAGGGCCGGGGAGGTGCCGAGCTCGGTGCTGGTCTC
TTTCCAAATATAAATACGTGTGTCAGAACTGGAATACTCCAGCACCCACCACCCAAGCA
CTCTCCGTTTTCTGCCGGTGTGGAGAGGGGGCGNGGGCAGGGGCGCCAGGCACCGGCT
GGCTGCGGTCTACTGCATCCGCTGGGTGTGCACCCCGCGA

13710.2

AGGTTGGAGAAGGTCATGCAGGTGCAGATTGTCCAGGSKCAGCCACAGGGTCAAGCCCCAA
CAGGCCCAGAGTGGCACTGGACAGACCATGCAGGTGATGCAGCAGATCATCTAACAACA
GGAGAGATCCAGCAGATCCCGGTGCAGCTGAATGCCGGCCAGCTGCAGTATATCCGCTTA
GCCCAGCCTGTATCAGGCACTCAAGTTGTGGAGGGACAGATCCAGACACTTGCCACCAAT
GCTCAACAGATTACACAGACAGAGGTCCAGCAAGGACAGCAGCAGTTCAAGCCAGTTCAC
AAGATGGACAGCAGCTCTACCAGATCCAGCAAGTCACCATGCCTGCGGGGCCANGACCTCG
CCAGCCCCATGTTTCATCCAGTCAAGCCAACCCAGCCCTTCNACGGGCAGGCCCCCAGGTGAC
CGGCGACTGAAGGGCCTGAGCTGGCAAGGCCAANGACACCCAACACAATTTTTGCCATAC
AGCCCCCAGGCAATGGGCACAGCCTTTCTCCAGAGGAC

13710-1

TGAGATTTATTGCATTTTCATCCAGCTTGAAGTCCATGCAAAGGRCAGTACACAGTTTTTA
ATGCATTTAAAAAATAAAAGCGGAGGTGGCCAGCAAAACACAAAAGTCCTAGTTTCTGGG
TCCCTGGGAGAAAAGAGTGTGGCAATGAATCCACCCACTCTCCACAGCGAATAAATCTGT
CTCTTAAATGCAAGAATGTTTCCATGGCCTCTGGATGCAAAATACACAGAGCTCTGGGGTC
AGAGCAAGGGATGGGGAGAGGACCAAGTGAAGGAGCAGCTACACACATTCACCTAAT
TCCATCTGAGGGCAAGCAACAACTGGCAAGTCTTGGGGGTAGCAGCTGTT

13711.1

TCCAGACATGCTCCTGTCTACGGCGGGACCAGGAACCAGACCTGCTATGGGAAGCAGAA
AGAGTTAAGCGAAGGTTTTCTTTCATTCCTGTTCTTCTTTTGTCTTTGAACAGTTTTTA
AATATACTAATAGCTAAGTCAATTCGCCAGCCAGGTCCCGGTGAACAGTAGAGAACAAGGA
GCTTGCTAAGAATTAATTTTGTGTGTTTTCACCCCATTCAAACAGAGCTGCCCTGTTCCTG
ATGGAGTTCATTCCTGCCACGGCACGGCTGAGTAACACGAAGCCATTCAAGAAAGGCGG
GTGTGAATCACTGCCACCCCATGGACAGACCCCTCACTCTTCTTACCCGCGAGCGCT
ACTTAATAAATAATTTATATCTTTGAAATTAATGATAACCGATTTTCCCATGCGGCATCCTA
AGGGCACTTGCCAGCTCTTATCCGGACAGTCAAGCACTGTTGTTGGACAACAGATAAAGG
AAAAGAAAAAGAAAGAAAACAACCGCAACTTCTGT

FIG. 15L

13719.1&2

GGCCGGGCGCGCGCGCCCCGCCACACGCACGCCGGGCGTGCCAGTTTATAAAGGGAGAG
AGCAAGCAGCGAGTCTTGAAGCTCTGTTTGGTGCTTTGGATCCATTTCCATCGGTCTTAC
AGCCGCTCGTCAGACTCCAGCAGCCAAGATGGTGAAGCAGATCGAGAGCAAGACTGCTTT
TCAGGAAGCCTTGGACGCTGCAGGTGATAAACTTGTAGTAGTTGACTTCTCAGCCACGTGG
TGTGGGCTTGGCAAAATGATCAAGCCTTTCTTTCAATCCCTCTCTGAAAAGTATTCCAACGT
GATATTCCTTGAAGTAGATGTGGATGACTGTCAGGATGTTGCTTCAGAGTGTGAAGTCAAA
TGCATGCCAACATTCCAGTTTTTTAAGAAGGGACAAAAGGTGGGTGAATTTTCTGGAGCCA
ATAAGGAAAAGCTTGAAGCCACCATTAAATGAATTAGTCTAATCATGTTTTCTGAAAATATA
ACCAGCCATTGGCTATTTAAAACTTGTAATTTTTTTAATTTACAAAATATAAAATATGAA
GACATAAACCCMGTTGCCATCTGCGTGACAATAAAACATTAATGCTAACACTT

13721.1

TCACATAAGAAATTTAAGCAAGTTACRCTATCTTAAAAAACACAACGAATGCATTTTAATA
GAGAAACCCTTCCCTCCCTCCACCTCCCTCCCTCCCTCCCTCATGAATTAAGAATCTAAG
AGAAGAAGTAACCATAAAAACCAAGTTTGTGGAATCCATCATCCAGAGTGCTTACATGGT
GATTAGGTTAATAATTGCTTCTTACAAAAATTTCTATTTTAAAAAAATTATAACCTTGATTG
CTTATTACAAAAAAATTCAGTACAAAAGTTCAATATATTGAAAAATGCTTTTCCCTCCCT
CACAGCACCGTTTTATATATAGCAGAGAATAATGAAGAGATTGCTAGTCTAGATGGGGCA
ATCTTCAAATTACACCAAGAGGCACAGTGGTTTATTTACCCTCCCTTCTCATAAG

13721.2

GGAAAGGATTCAAGAAATTAGACGACTTCTTGGCTRRAGAAAAAGACAACCTCTCGTGGCAT
GCTGACAGACAAAGAGAGAGAGATGGCCGAAATAAGGGATCAAAATGCAGCAACAGCTGA
ATGACTATGAACAGCTTCTTGAATGTAAGTTAGCCCTGGACATGGAAATCAGTGCTTACAG
GAAACTCTTAGAAGGCCAAGCAAGAGAGGTTGAAGCTGTCTCCAAGCCCTTCTTCCCGTGT
GACAGTATCCCGAGCATCCTCAAGTCTAGTGTACCGTACAACCTAGAGGAAAGCGGAAGA
GGGTTGATGTGGAAGAATCAGAGGCCAAGTAGTAGTGTAGCATCTCTCATTTCCGCCTCAA
CCACTGGAAATGTTTGCATCGAAGAAATTCATGTTGATGGGAAATTTATCCCGCTTGAAGA
ACACTTCTGAACAGGATCAACCAATGGCAAGCCTTGGGAGATGATCAGAAAAATTGGAGA
CACATCAGTCAGTTATAAATATACCTCAA

13723.1

CATGGGTTTCACCAGGTTGCCAGGCTGCTCTTGAACSTCTGACCTCAGGTGATCCACCCG
CCTCGGCCTCCCAAAGTCTCTGGGATTACAGGCGTGAGCCACCACGCTCGGCCCCCAAAGC
TGTCTCTTTTGTCTTTAGCGTAAAGCTCTCTGCCATGCAGTATCTACATAACTGACGTGAC
TGCCAGCAAGCTCAGTCACTCCGTGCTCTTTCTCTTTCCAGTCTCTCTCTCTCTTCAAG
TTCTGCCTCAGTGAAAGCTGCAGGTCCCCAGTTAAGTGATCAGGTGAGGGTTCTTTGAACC
TGGTTCTATCAGTCGAAATTAATCCTTCATGATGG

FIG. 15N

13723.2

GATGTGTTGGACCTCTGTGTCAAAAAAACCTCACAAGAATCCCCTGCTCATTACAGAA
GAAGATGCATTTAAATATGGGTTATTTTCAACTTTTTATCTGAGGACAAGTATCCATTAA
TTATTGTGTCAGAAGAGATTGAATACCTGCTTAAGAAGCTTACAGAAGCTATGGGAGGAG
GTTGGCAGCAAGAACAATTTGAACATTATAAAATCAACTTTGATGACAGTAAAAATGGCC
TTTCTGTCATGGGAACCTTATTGAGCTTATTGGAAATGGACAGTTTAGCAAAGGCATGGACCG
GCAGACTGTGTCTATGGCAATTAATGAAGTCTTTAATGAACCTTATATTAGATGTGTTAAAG
CAGGGTTACATGATGAAAAAGGCCACAGACGGAAAACTGGACTGAAAGATGGTTTGTA
CTAAAACCCAACATAATTTCTTACTATGTGAGTGAGGATCTGAAGGATAAGAAAGGAGAC
ATTCTCTTGGATGAAAATTGCTGTGTAGAAGTCTTGCTGACAAAAGATGGAAAGAAAT
GCCTTTT

13725.1

GACTGGTTCCTTTATTTCAAAAAGACACTTGTCAATATTCAGTRTCAAAACAGTTGCACTATT
GATTTCTCTTTCTCCCAATCGGCCCCAAAGAGACCACATAAAAGGAGAGTACATTTTAAGC
CAATAAGCTGCAGGATGTACACCTAACAGACCTCCTAGAAACCTTACCAGAAAAATGGGGA
CTGGGTAGGGAAGGAACTTAAAGATCAACAACTGCCAGCCACGGACTGCAGAGGCT
GTCACAGCCAGATGGGGTGGCCAGGGTGGCCACAAACCCAAAGCAAAAGTTTCAAAATAATA
TAAAAATTTAAAAAGTTTGTACATAAGCTATTCAAGATTTCTCCAGCACTGACTGATACAA
AGCACAATTGAGATGGCACTTCTAGAGACAGCAGCTTCAAACCCAGAAAAGGGTGATGAG
ATGAAGTTTCACATGGCTAAATCAGTGGCAAAAACACAGTCTTCTTTCTTTCTTTCTTCAA
GGANGCAGGAAAGCAATTAAGTGGTCACCTTAACATAAGGGGGGAC

13725.2

TGGGTGGGCACCATGGGTGGGATCACCACCATCGAGCGGTGAAGCCCAAGATCCAGGTT
CTGCAGCAGCAGCCAGATGATGAGAGGAGCGAGCTGAGCGCCTCCAGCGAGAAGTTGA
GGGAGAAAGCGGGGCCCCGGAACAGGCTGAGGCTGAGGTGGCCTCCTTGAACCGTAGGA
TCCAGCTGGTTGAAGAAGAGCTGGACCGTCTCAGGAGCGCCTGGCCACTGCCCTGCAAA
AGCTGGAAGAAGCTGAAAAAGCTCTGTATGACAGTGAGAGAGGTATGAAGGTTATTGAA
AACCGGGCCTTAAAGATGAAGAAAGATGGAAGTCCAGGAAATCCAACCTCAAAGAAGC
TAAGCACATTGAGAAGAGCCAGATAGGAAGTATGAAGAGGTGGCTCGTAAGTTGCTGAT
CATTGAAGGAGACTTGGAAACCGCACAGAACGAACGAGCTTGAGCTTGGCAAAAGTCCCGT
TGCCAGAGATGGGATGAACCAGATTAGACTGATGGACCANAACC

13726.1&2

AGGGGNCYCGGGTGGCTGGGCACTGGGTGACCGACTTAGCCTGGCCAGACTCTCAGCAC
CTGGAACCGCCCCGAGAGTGACAGCGTGAGGCTGGGAGGGAGGACTTGGCTTGAGCTTGT
TAAACTCTGCTCTGAGCCTCCTTGTGGCTGCATTTAGATGGCTCCCGCAAAAGAGGGTGG
CGAGAAGAAAAAGGGCGGTTCTGCCATCAACGAAGTGGTAACCCGAGAATACACCATCAA
CATTACAAAGCGCATCCATGGAGTGGGCTTCAAGAAGCGTGCACCTCGGGCACTCAAAGA
GATTCCGAAATTTGCCATGAAGGAGATGGGAAGTCCAGATGTCCGCAATTGACACCAGGCT
CAACAAAGCTGTCTGGGCAAAAGCAATAAGGAATGTGCCATACCGAATCCGGTGTCCGGC
TGTCAGAAAACGTAATGACGATGAAGATTACCAAAATAAGCTATATACTTTGGTTACCTA
TGTACCTGTTACCACTTTCAAAAATCTACAGACAGTCAATGTGGATGAGAACTAATCGCTG
ATCGTCAGATCAAAATAAGTTATAAAT

FIG. 150

13727.1

TCGGGAGCCACACTTGGCCCTCTTCTCTCCAAAGSGCCAGAACCTCCTTCTCTTTGGAGAA
TGGGGAGGCCTCTTGGAGACACAGAGGGTTTCACCTTGGATGACCTCTAGAGAAATTGCC
CAAGAAGCCCACCTTCTGGTCCCAACCTGCAGACCCACAGCAGTCAGTTGGTCAGGCCCT
GCTGTAGAAGGTCACCTTGGCTCCATTGCCTGCTTCCAACCAATGGGCAGGAGAGAAGGCC
TTTATTTCTCGCCACCCATTCTCTGTACCAGCACCTCCGTTTTTCAGTCAGTGTTGTCCA
GCAACGGTACCGTTTACACAGTCACCTCAGACACACCATTTACCTCCCTTGCCAAGCTGT
TAGCCTTAGAGTGATTGCAGTGAACACTGTTTACACACCGTGAATCCATTCCCATCAGTCC
ATTCCAGTTGGCACCAGCCTGAACCATTTGGTACCTGGTGTTAACTGGAGTCCTGTTTACA
AGGTGGAGTCGGGGCTTGCTGACTTCTCTTCATTGAGGGCAC

13727.2

ACCTAGACAGAAGGTGGGTGAGGGAGGACTGGTAGGAGGCTGAGGCAATTCCTTGGTAGT
TTGTCTGAAACCCTACTGGAGAAGTCAGCAATGAGGCACCTACTGAGAGAAGTGCCCGAGA
AACTGCTGACTGCATCTGTTAAGAGTTAACAGTAAAGAGGTAGAAGTGTTTCTGAATCA
GAGTGGAAAGCGTCTCAAGGGTCCACAGTGGAGGTCCCTGAGCTACCTCCCTTCCGTGAGT
GGGAAGAGTGAAGCCCATGAAGAAGTGAAGTGAAGCAAGGATGGGGTTCCTGGGCTCCA
GGCAAGGGCTGTGCTCTCTGCAGCAGGGAGCCCCACGAGTCAGAAGAAAAGAACTAATCA
TTTGTTCGAAGAAACCTTGCCCGGATACTAGCGGAAAACTGGAGGCGGNGGTGGGGGCAC
AGGAAAGTGGAAAGTGATTGATGGAGAGCAGAGAAGCCTATGCACAGTGGCCGAGTCCAC
TTGTAAGTG

13728.1&2

TTCAAGCAATTGTAAACAAGTATATGTAGATTAGAGTGAGCAAAATCATATACAATTTTCAT
TTCCAGTTGCTATTTTCCAAATGTTCTGTAATGTCTGTTAAAATTACTTAAAAATTAACAAA
GCCAAAAATTAATTTATGACAAGAAAGCCATCCCTACATTAATCTTACTTTTCCACTCAC
CGGCCCCATCTCTCTCTCTTTTCTTAAGTATGCCATTAAAACTGTTCTACTGGGCGGGGGC
TGTGGCTCATGCCTGTAAATCCAGCAATTTGGGAGGCCAAGGCAGGCGGATCATGAGGTC
AAGAGATTGAGACCATCCTGGCCAAATGTTGAAACCCCGCTCGACTAAGAATACAAAA
ATTAGCTGGGCATGGTGGCCCATGCTGTAGTGTCACTACTCGGGAGGCTGAGGCAGAA
GAATCGCTTGAACCCGGGAGGCAGAGGATGAGTGGAGCCCCGATCGCGCCACTGCACTCT
AGCCTGGGCGACAGACTGAGACTCTGCTC

13731.1&2

TGTGCCAGTCTACAGGCCTATCAGCAGCGACTCCTTCAGCAACAGATGGGGTCCCCCTGTTT
AGCCCAACCCCATGAGCCCCCAGCAGCATATGCTCCCAAATCAGGCCAGTCCCCACACCT
ACAAGGCCAGCAGATCCCTAATTTCTCTCTCAATCAAGTGCGCTCTCCCCAGCCTGTCCCTT
CTCCACGGCCACAGTCCCAGCCCCCAGTCCAGTCTTCCCCAAGGATGCAGCCTCAGCC
TTCTCCACACCAGTTTCCCCACAGACAAGTTCCCCACATCCTGGACTGGTAGTTGCCAG
GCAACCCCATGGAACAAGGGCATTTTCCAGCC

FIG. 15P

14347.1

CAGATTTTTATTGTCAGTCGTCAGTGGGGCCGTTTCTTGCTGCTTATTTGTCTGCTAGCCTG
CTCTTCCAGCTGCATGGCCAGGCGCAAGGCCTTGATGACATCTCGCAGGGCTGAGAAATGC
TTGGCTTGCTGGGCCAGAGCAGATTCCGCTTTGTTTACAAAGGTCTCCAGGTCATAGTCTG
GCTGCTCGGTTCATCTCAGAGAGCTCAAGCCAGTCTGGTCTTGTGTATGATCTCTTGTAG
CTCTTCCATAGCCTTCTCCTCCAGCTCCCTGATCTGAGTCATGGCTTCGTTAAAGCTGGACA
TCTGGGAAGACAGTTCCCTCCTCTTCTTGGATAAAATTGCCTGGAATCAGCGCCCCGTTAGA
GCAGGCTTCCATCTCTTCTGTTTCCATTGAATCAACTGCTCTCCACTGGGCCCCACTGTGGG
GGCTCAGCTCCTTGACCCTGCTGCATATCTTAAGGGTGTTTAAAGGATATTCACAGGAGCT
TATGCCTGGT

14347.2

CTCCTCTTGGTACATGAACCCAAGTTGAAAGTGGACTTAACAAAGTATCTGGAGAACCAA
GCATTCTGCTTTGACTTTGCATTTGATGAAACAGCTTCGAATGAAGTTGTCTACAGGTTTAC
AGCAAGGCCACTGGTACAGACAATCTTTGAAGGTGGAAAAGCAACTTGTTTGCATATGG
CCAGACAGGAAGTGGCAAGACACATACTATGGGCGGAGACCTCTCTGGGAAAGCCAGAA
TGCATCCAAAGGGATCTATGCCATGGCCTTCCGGGACGTCTTCTTCTGAAGAATCAACCT
GCTACCGGAAGTTGGGCTGGAAGTCTATGTGACATTCTTCGAGATCTACAATGGGAAGCT
GTTTGACCTGCTCAACAAGAAGGCCAAGCTTGGCGGTGCTGGAAGACGGCAAGCAACAGG
TGCAAGTGGTGGGGGCTTGCAAGCAATCTGONTAACTCTGCTTGATGATGGCANTCAAG
ATGATCGACATGGGCAGCGCTGCAGA

14348.2&14350.1&2

TCCCGAATTCAAGCGACAAATTGGAWAGTGAATGGAAGATGCCTATCATGAACATCAGG
CAAATCTTTTGGCCCAAGATCTGATCAGACGACAGGAAGAATTAAGACGCATGGAAGAAC
TTCACAATCAAGAAATGCAGAAAGCTAAAGAAATGCAATTGAGGCAAGAGGAGGAACGA
CGTAGAAGAGAGCAAGAGATCATGATTGCTCAACGTGAGATGGAAGAACAATGAGGCG
CCAAAGAGAGGAAAGTTACACCCGAAATGGGCTACATGGATCCACGGGAAAGAGACATGC
GAATGGGTGGCGGAGGACCAATGAACATGGGAGATCCCTATGGTTTCAGGAGGCCAGAAA
TTTCCACCTCTAGGAGGTGGTGGTGGCATAGGTTATGAAGCTAATCCTGGCGTTCCACCAG
CAACCATGAGTGGTTCATGATGGGAAGTGACATGGCTACTGAGCGCTTGGCCAGGGAG
GTGCGGGGCTGTGGGTGGACAGGGTCTAGAGGAATGGGGCTGGAACCTCCAGCAGGAT
ATGGTAGAGGGAGAGAAGAGTACCAAGGC

14349.1&2

TTCTGCAAGACCCTCACTGGTAAGACCATCACTCTCGAAGTGGAGCCCGAGTGACACCATT
GAGAATGTCAAGGCAAAAGATCCAAAGACAAGGAAGGCATCCCTCCTGACCAGCAKAGGTTG
ATCTTTGCTGGGAAACAGCTGGAAGATGGACGCACCTGTCTGACTACAACATCCAGAAA
GAGTCCACCCTGCACCTGGTGTCTGCTCAGAGGTGGGATGCAAAATCTTCTGTAAGACCC
TGACTGGTAAGACCATCACCTCCAGGTGGAGCCAGTGACACCATCGAGAATGTCAAGG
CAAGATCCAAGATAAGCAAGCCATCCCTCCTGATCAGCAGAGGTTGATCTTTGCTGGGA
AACAGCTGGAAGATGGACGCACCTGTCTGACTACAACATCCAGAAAGAGTCCACTCTGC
ACTTGGTCTGCGCTTGAGGGGGCGGTGTCTAAGTTTCCCTTTTAAAGGTTTCAACAAATTTC
ATTGCACTTTCCTTTCAATAAAGTTGTTCATTG

FIG. 15R

13734.1&2

TGTA AAAA ACTTGT TTTTAA TTTTGTATA AAAATAAAAGGTGGTCCATGCCCACGGGGGGCTGTA
GGAAATCCAAGCAGACCAGCTGGGGTGGGGGGATGTAGCCTACCTCGGGGGACTGTCTGT
CCTCAAAACGGGCTGAGAAGCCCCGTGAGGGGCCAGGTCCCACAGAGAGGCCTGGGATA
CTCCCCCAACCCGAGGGGCAGACTGGGCAGTGGGGAGCCCCCATCGTGCCCCAGAGGTGG
CCACAGGCTGAAGGAGGGGCTGAGGCACCGCAGCCTGCAACCCCCAGGGCTGCAGTCCA
CTAACTTTTTACAGAATAAAAAGGAACATGGGGATGGGGAAAAAAGCACCAGGTGAGGCA
GGGECGAGGGCCCCAGATCCCAGGAGGGCCAGGACTCAGGATGCCAGCACCACCCTAGC
AGTCCCACAGCTCCTGGCACAGGAGGCCGCCACGGATTGGCACAGGCCGCTGCTGGCCA
TCACGCCACATTTGGAGAACTTGTCCCCACAGAGGTGAGCTCGGAGGAGCTCCTCGTGGGC
ACACACTGTACGAACACAGATCTCCTTGTAAATGACGTACACACGGCGGAGGCTGCGGGG
ACAGGGCACGGGAGGTCTCAGCCCCACTT

13736.2

ATGGCTGCTGGATTTAGGTGGTAATACGGGCTGTGGGCCATAAATCTGAAGCCTTGAGAA
CCTTGGGTCTGGAGAGCCATGAAGAGGGAAGGAAAAGAGGGCAAGTCTGAACCTAACC
AATGACCTGATGGATTGCTCGACCAAGACAGAAAGTGAAGTCTGTGTCTGTGCACTTCCC
ACAGACTGGAGTTTTTGGTGTCTGAATAGACCCAGTTGCTAAAAAATTGGGGGTTTGGTGA
AGAAATCTGATTGTTGTGTGTAATCAATGTGTGATTTTAAAAATAAACAGCAACAACAATA
AAAACCTGACTGGCTGTTTTTCCCTGTATTTTACAATAATTTTTGACCCTCTGAAAA
TTATTATACTTCACCTAAATGGAAGACTGCTGTGTTTGTGGAAAATTTGTAATTTTTTAAT
TATTTTATTCTCTCTCTCTTTTATTTTCCCTGCAGAATCCGTTGAGAGACTAATAAGGCTTA
ATATTTAATTGATTTGTAAATATGTATATAAAT

13744.2-13696.2

GGCATGCGACCCACTCGCCCGACCGAAGGGCGGCGGGAGCACACGGAGCACTGCAGG
CGCCGGGTGGGACAGCGCTCTTGGCTGCTGCTGGATAGTCTGTGTTTCGGGGATCGAGGAT
ACTCACCAGAAACCGAATAATCCCGAAGCCAAATCAATGTCCGAGTTACCACCATGGATGCA
GAGCTGGAGTTTGCAATCCAGCCAAATCAACTGGAAAACAGCTTTTTGATCAGGTGCTA
AAGACTATCGCCCTCCCGGAAGTGTGCTACTTTGGCCTCCACTATGTGGATAATAAAGGAT
TTCTTACCTGGCTGAAGCTCGATAAGAAAGGTGTCTGCCAGGAGGTGAGGAAGGAGAATC
CCCTCAGTTCAAGTTCCGGGGCAAGTTCTACCTGAAGATGTGGCTGAGGAGCTCATCC
AGGACATCACCCAGAAACTTTCTTCTTCAAGTGAAGGAAGGAATCCTTAGCGATGAGAT
CTACTGCCCCCTTGARACTCCCGTGGTCTGGGGTCTACGCTTGTGCATGCCAAGTTTGG
GGACTACCACCAAGAAG

13746.1&2-13720.1&2

GAAGGAGTCCGGGATACTCAGCAATGATCCACCCCAATTTCAAAGCGGCATTCTTCGGCAG
GTCTCTGGGACAATCTCTAGGGTCACTACCTGGAAACTCGTTAGGGTACAACCTGAATGCTG
AAAGGAAAGAACACCTGCAGAACCGACAGAAATTCACCCCGGCGATCAGCTGATTGATC
TCGGTTCGACCAGAAGTCATGGCTAAAGATGACGAGGACGTTGTCAATTCCTGGGCTTTTC
GAAGTGAGTCCAGCAGCAGTCTGAGGTATTCGGGGCCGTTATGCACCTGGACCACCAGCA
CCAGCTCCCGGGGGGGCCAGGTGCCAGCCTTATCTACATTCCTCAGGGTCTGATCAAAGTT
CAGCTGGTACACCAGGCACCGGTACCGCAGCGTCAGGTTGTCCGCTCGGGCTGGGGGACC
GCGGGCACCCAGGGAAGCCCGCCGACAGGTTGGAGACCCTGCGGATGCCACAGCCACAGAG
GGTGCTCCCAACCCGCGCGCCGACCCCGCGGGTTCGGCGTCCAGCAACGGTGGG
GCGAGGCGCTCGTTCTTCCTTCTCGCCCATCTGCTGCTCCAGAGGACGAAGCCGAGGCGG
CCACCACGAGCGTCAGGATTAGCACCTTCGTTTGTAGATGCGGAACCTCATGGTCTCCAG
GGCCGGGAGCGCAGCTACAGCTCGAGCGTCCGGCGCGCGCTAGGAGCCCGGCTCGGCT
TCGTCTCCGTCTCTCCATTACGACCAACGGGTCCCGGAAAAAGCTCAGCCSCGGTCCCAA
CCGCACCCTAGCTTCGTTACCTCGGCTCGCTTG

FIG. 15Q

14352.1&2

GCGCGGGTGCGTGGGCCACTGGGTGACCGACTTAGCCTGGCCAGACTCTCAGCACCTGGA
AGCGCCCCGAGAGTGACAGCGTGAGGCTGGGAGGGAGGACTTGGCTTGAGCTTGTTAAAC
TCTGCTCTGAGCCTCCTTGTGCGCTGCATTTAGATGGCTCCCGCAAAGAAGGGTGGCGAGA
AGAAAAAGGGCCGTTCTGCCATCAACGAAGTGGTAACCCGAGAATACACCATCAACATTC
ACAAGCGCATCCATGGAGTGGGCTTCAAGAAGCGTGCACCTCGGGCACTCAAAGAGATTG
GGAAATTTGCCATGAAGGAGATGGGAATCCAGATGTGCGCATTGACACCAGGCTCAACA
AAGCTGTCTGGGCCAAAGGAATAAGGAATGTGCCATACCGAATCCGTGTGCGGCTGTCCA
GAAAACGTAATGAGGATGAAGATTCACCAAATAAGCTATATACTTTGGTTACCTATGTACC
TGTTACCACTTTCAAAAAATCTACAGACAGTCAATGTGGATGAGAACTAATCGCTGATCGT

14353.1

AATTCTTTATTTAAATCAACAAACTCATCTTCTCTCAAGCCCCAGACCATGGTAGGCAGCCC
TCCCTCTCCATCCCCTCACCCACCCCTTAGCCACAGTGAAGGGAATGGAAAATGAGAAGC
CAGGAGGGCCCCCTGCCAGGGAAGGCTGCCCCAGATGTGTGGTGAGCACAGTCAGTGACG
TGTGGCTGGGGCAGCAGCTGCCACAGGCTCCTCCTATAAATTAAGTTCTGCAGCCACAG
CTGTGGGAGAAGCATACTTGTAGAAGCAAGGCCAGTCCAGCATCAGAAGGCAGAGGCAG
CATCAGTGACTCCAGCCATGGAATGAACGGAGGACACAGAGCTCAGAGACAGAACAGG
CCAGGGGGAAGAAGGAGAGACAGAAAGGCCAGGGCATGGCGGTGAGGGA

14353.2

TGATCAATCTGGGTGGGCTGGCAGTAGCCCCGAGATGATGGCCTCTTCTCTGGGGATCCCAA
CTGGTTCCTAAGAAATCCAAGGAGAAATCCTCGGAATTTCTCGGATAACCAAGCTGCAAGA
GGGCAAGAAGCTGATCGGCTTACAGATGGCCACCAACCGCGGGGCGTCTCANGCAGGCAT
GACTGGCTACGGCATCCGACGCCAGATCCTCTGATCCCAACCCAGGCCTTGCCCTTGCCCT
CCCAGCAATGGTTAATATATATGTAGATATATATTTAGCAGTGACATCCCGAGAGAGCCC
CAGAGCTCTCAAGCTCCTTTCTGTGAGGCTGGGGGTTCAAGCCTGTCTGTACCTCTGA
AGTGCCTGCTGGCATCCTCTCCCCCATGCTTACTAATACATTCCCTTCCCCATAGCC

17182.1&2

AGCGGAGCTCCCTCCCTGGTGGCTACAACCCACACACGCCAGGCTCAGGCATCGAGCAG
AACTCCAGCGACTGGGTAACCACTGACATTCAGGTGAAGGTGCGGGACACCTACCTGGAT
ACACAGGTGGTGGGACAGACAGGTGTATCCGAGTGTACGGGGGCCATGTGCTCTGTG
TACCTGAAGGACAGTGAGAAGGTTGTGAGCATTTCCAGTGAGCACCTGGAGCCTATCACC
CCACCAAGAACAACAAGGTGAAGTGTATCCTGGGGAGGATCGGGAAGCCACGGGCGT
CCTACTGAGCATTGATGGTGAGGATGGCAATGTCCGTATGGACCTTGATGAGCAGCTCAAG
ATCCTCAACCTCCGCTTCTCGGCAAGCTCCTCGAAGCCTGAAGCAGGCAGGGCCGGTGG
ACTTCGTGGGATGAAGAGTGATCCTCCTTCCCTGGCCCTTGGCTGTGACACAAGATC
CTCCTGCAGGGCTAGGCGGATGTTCTGGATTTCCTTTGTTTTCTTTTAGGTTTCCATCT
TTTCCCTCCCTGGTGCTCATTTGGAATCTGAGTAGAGTCTGGGGGAGGGTCCCCACCTTCCT
GTACCTCCTCCCCACAGCTTCTTTGTTGTACCGTCTTTCAATAAAAAGAAGCTGTTTGGT
CTA

FIG. 15S

17183.2

GGTTCACAGCACTGCTGCTTGTGTGTTGCCGGCCAGGAATTCAGGCTCACAAGGCTATCT
TAGCAGCTCGTTCTCCGGTTTTAGTGCCATGTTTGAACATGAAATGGAGGAGAGCAAAAA
GAATCGAGTTGAAATCAATGATGTGGAGCCTGAAGTTTTTAAGGAAATGATGTGCTTCATT
TACACGGGGAAGGCTCCAAACCTCGACAAAAATGGCTGATGATTTGCTGGCAGCTGCTGAC
AAGTATGCCCTGGAGCGCTTAAAGGTCAATGTGTGAGGATGCCCTCTGCAGTAACCTGTCCG
TGGAGAACGCTGCAGAAATTCTCATCTGGCCGACCTCCACAGTGCAGATCAGTTGAAAA
CTCAGGCAGTGGATTTTCATCAACTATCATGCTTCGGATGTCTTGGAGACCTCTTGGG

17186.1&2

TCGTAGCCATTTTTCTGCTTCTTTGGAGAATGACGCCCACTGACTGCTCATTGTGCTTGGT
TCCATGCCAATTGGTGAAATAGAACCTCATCCGGTAGTGGAGCCGGAGGGACATCTTGTG
ATCAACGGTGATGGTGGGATTTGGAGCATAGCAGAGCTTGGTGTCTCGCCATACAGGGCA
AAGAGGTTGTGACAAAGAGGAGAGATACGGCATGCCCTGTGCAGCCCTGATGCACAGTTCC
TCTGCTGTGTAATCTCCACTGCCCCAGCCGGAGGGGCTCCCTGTCCGACAGATAGAAGATCA
CTTCCACCCCTGGCTTG

17187.1&2

TGGCACACTGCTCTTAAGAACTATGAWGATCTGAGATTTTTTGTGTATGTTTTTACTCT
TTTGAGTGCTAATCATATGTGTCTTATAGATGTACATACCTCCTTGCACAAATGGAGGGG
AATTCATTTTCATCACTGGGAGTGTCTTGTGTATAAAAAACCATGCTGGTATATGGCTTC
AAGTTGTAAAAATGAAAGTGACTTTAAAGGAAAAATAGGGGATGGTCCAGGATCTCCACTG
ATAAGACTGTTTTTAAGTAACTTAAGGACCTTTGGGTCTACAAGTATATGTGAAAAAAATG
AGACTTACTGGGTGACGAAATTCATGTTTTAAAGATGGTGGTGTGTGTGTGTGTGTGTGTG
TG
ACTGKGTAAATATATGTGTGATAATGATTTGCTTTTTGVCMACTAAAAATTAGGVCTGTATA
AGTWCTARATCCMTCCCTGGCKSTTCATYTTCCMAGATATTGATGATAMCCCTTAAAAATT
GTAACCYGCCTTTTTCCCTTTGCTYTCMAATTAAGTCTATTTCMAAAG

17191.1&39.1

GGGGGTAGGCTCTTTATTAGACGGTTATTCCTGTAACAGGGTCAGAGTGCAGTGTAAGC
AGTGTGAGAGCCCCCGCTTCAGCCCAAGAATGTGGATTTTCTCTCCCTATTGATCACAGTG
GGTGGGTTTCTTCAGAAAACCCCCAGAGCCAGGGACCACTGAGCTCCAAGGTTAGAAGTG
GAACTCGAAGGCTTCACTCACATGCTGCTTCCACGCTTCCAGGCTGGGCAGCAAGGAGGA
GATCCCCATGACGTGCCACGTCTCCCATGTGACACCAAGTGAAGTCTGGTAGGACAGCAG
CCGCACGCCTGCCCTGTGCCAGGAGGCCAATCATGGTAGGCAGCATTCAGGGGTCAGAGGT
CTGAGTCCCGAATAGGAGCAGGGGCGAGGTCCCTGCGGAGAGGCCACTTCTGGCCTGAAGAC
AGCTCCAATTGAGCCCCCTCCAGTACAGGYGTAGTGCCTTGGACCAAGCCACAGCCTGGTA
AGGGCGCCTGCCAGGGCCACGGCCAGGAGCCA

FIG. 15T

TAATTTCTTAGTCGTTTGGAAATCCTTAAGCATGCAAAAAGCTTTGAACAGAAGGGTTACAA
 AGGAACCAGGGTTGTCTTATGGCATCCAGTTAAGCCAGAGCTGGGAATGCCTCTGGGTCAT
 CCACATCAGGAGCAGAAGCACTTGACTTGTCGGTCTGCTGCCACGGTTTGGGCGCCACC
 ACGCCACGTCCACCTCGTCTCCCTGCCGCCACGTCTGGGCGGCCAAGGTCTCCAAAA
 TTGATCTCCAGCTGAGACGTTATATCATTTGCTGGCTTCCGGAAATGATGGTCCATAACCG
 AATCTTCAGCATGAGCCTCTTCACCTCTTGATTATGAAGAACAATCCCTTCTTCCACTGC
 CCATCAGCACCTTCATTTGGTTTTTCGGATATTAATTTCTACTTTTGCCCGGTCTTATTTGA
 ATAGCCTTCCACTCATCCAAAGTCATCTCTTTTGGACCCTCCTCTTTACCTCTTCAACTTCA
 TTCTCCTTAATTTTCACTGTCTGCCACTGGATGATGTCTTACCTTCAGGTGTTTCTCAGTC
 ACATTTGATTGATCCAAGTCAGTTAATTCGTCTTTGACAGTTCCCCAGTTGTGAGATCCGCT
 ACCTCCACGTTTGTCTCGTGTCTCAGGCCAGATCTATCACTTCCACTATGCCTATCAAATT
 CACGTTTGGCAGGAGAATCAAATCCATCTCTCGGCCATTCCACGTCCACGGCCCCCTCG
 ACCTCTTCCAAGACCACCACGACCTCGAATAGGTGGTCAATAATCGGTCTATCAACTGAA
 AATTGCGCTCCTTACCCCTTTCTTCAAGTGGCTTTTGAATCTTCGTTACAGAGGTGGTGC
 CCTTCTGGTCTTCTATCAATTAATTTCCCTTACCCTGAAGTTGTTGATCAGGTCTTCTTCC
 AACTCGTGC

17193

AAGCGGATGGACCTGAGTCAGCCGAATCCTAGCCCCCTTCCCTTGGCCCTGCTGTGGTGCTC
 GACATCAGTGACAGACCGAAGCAGCAGACCATCAAGGCTACGGGAGGCCCGGGCGCTT
 GCGAAGATGAAGTTTGGCTGCTCTCTTCCGGCAGCCTTATGCTGGCTTTGTCTTAAATG
 GAATCAAGACTGTGGAGACCGGCTGGCGTCTGCTGAGCAGCCACCGGAAGTGTACCA
 TCGCCGTCCACATTCCTCAGCAGGCACTGCGAAGGCGATGCTGTGGGAGCTGCTGGTGG
 AGAGACTCGGGATGACTCTCTGCTCAGATTACGCCCTTCTCAGGAAAGGGGAAAAGTTTG
 GTCCAGGAGTGATAGCGGGACTCGTTGACATTTGGGGAAGCTTTGCAATGCCCCGAAGACT
 TAACTCCCGATGAGGTTGTGGAATAGAAAATCAAGCTGCACTGACCAACCTGAAGCAGA
 AGTACCTGACTGTGATTTCAAAGCCCGAGGTGGTTACTGGAGCCCATACCTAGGAAAGGAG
 GCAACGATGTATTCCAGGTAGACATCCACAGCACCTGATCCCTTTGGGGCATGAAGTGT
 GACAAGTGTGGGCTCTGAAAGGCAATGTTCCRGAGAAACCAGCTAAATCATGGCACCTTC
 AATTTGCCATCGTGACCCAGACCTGTATAAAATTAGGTTAAAGATGAATTTCCACTGCTTTG
 GAGAGTCCCAACCACTAAGCACTGTCCATGTAAACAGGTTCTTTGCTCAGATGAAGGAA
 GTAGGGCGTGGGGCTTCTTCTGTGATGCCCTCTTAGCCACACAGGCAATGTCTCAAGTA
 CTTGACCTTAGGGTAGAAGGCAAGCTGCCAGTAAATGTCTCAGCAATTGCTCCTAATTT
 GGTCTGCTAGTTTCTGCAATCTACAAATAAATGTGTTGTAGATGA

FIG. 15U

16443.1.edit

TCGAGCGGCCCGCCCGGGCAGGTGTCGGAGTCCAGCACGGGAGGCGTGGTCTTGTAGTTGT
TCTCCGGCTGCCCAATTGCTCTCCCACTCCACGGCGATGTGCTGGGATAGAAGCCTTTGAC
CAGGCAGGTGAGGCTGACCTGGTTCTTGGTCATCTCCTCCCGGGATGGGGGCAGGGTGTAC
ACCTGTGGTTCTCGGGGCTGCCCTTGGCTTTGGAGATGGTTTCTCGATGGGGGCTGGGA
GGGCTTTGTTGGAGACCTTGCACTTGTA CTCTTGCCATTCAACCAGTCTGGTGCANGAC
GGT&AGGACGCTNACCACACGGTACGNGCTGGTGTACTGCTCCTCCCGCGGCTTTGTCTTG
GCATTATGCACCTCCACGGCGTCCACGTACCAATTGAACCTGACCTCAGGGTCTTCGTGGC
TCACGTCCACCACCACGCATGTAACCTCAAANCTCGGNCGCGANACGC

16443.2.edit

AGCGTGGTCCGGGCCGAGGTCTGAGGTTACATGCGTGGTGGTGGACGTGAGCCACGAAGA
CCCTGAGGTCAAGTTCAACTGGTACGTGGAC&GCGTGGAGGTGCATAATGCCAAGACAAA
GCGCGGGGAGGAGCAGTACAACAGCACGTACCGTGTGGTCAGCGTCTCACCCTCCTGCA
CCAGGACTGGCTGAATGGCAAGGAGTACAAGTGCAAGGTCTCCAACAAAGCCCTCCCAGC
CCCCATCGAGAAAACCATCTCCAAGGCCAAAGGGCAGCCCCGAGAACCACAGGTGTACAC
CCTGCCCCCATCCCCGGGAGGAGATGACCAAGAACCAGGTCAGCCTGACCTGCCTGGTCAA
AGGCTTCTATCCCAGCGACATCGCCCGTGGAGTGGGAGAGCAATGGGCAGCCGGAGAACA
ACTACAAGACCACGCCTCCCGTGGTGGACTCCGACACCTGCCGGGCGGGCGCTCGA

16444.2.edit

AGCGTGGTTNCGGCCGAGGTCCCAACCAAGCCTGCANCTGGATGCCATCAAAGTCTTCTG
CAACATGGAGACTGGTGAGACCTGCGGTGACCCCACTCAGCCAGTGTGGCCAGAGAAGAA
CTGGTACATCAGCAAGAACCCCAAGGACAAGAGCCATGTCTGGTTCGGCGAGAGCATGAC
CGATGGATTCCAGTTCGAGTATGCGCGCCAGGGCTCCGACCCTGCCGATGTGGACCTGCCC
GGGCGGNCGCTCGA

16445.1.edit

AGCGTGGTCCGGGCCGAGGTCAAGAACC&CGCCGACCTGCCGTGACCTCAAGATGTGC
CACTCTGACTGGAAGAGTGGAGACTACTGGATTGACCCCAACC.AAGGCTGCAACCTGGAT
GCCATCAAAGTCTTCTGCAACATGGAGACTGGTGAGACCTGCGTGTACCCCACTCAGCCCA
GTGTGGGCCAGAAGAAGTGGTACATCAGCAAGAACC&CAAGGACAAGAGGCATGTCTGGT
TCGGCGAGAGCATGACCGATGGATTCCAGTTCGAGTATGCGCGCCAGGGCTCCGACCCTG
CCGATGTGGACCTGCCCGGCCCGCGCTCGA

FIG. 15V

16445.2.edit

TCGAGCGGTGCGCCCGGGCAGGTCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCG
AACTGGAATCCATCGGNCATGCTCTCGCCGAACCAGACATGCCTCTTGNCCTTGGGGTTCT
TGCTGATGTACCAGNTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACC
ANTCTCCATGTTGCANAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGTCAATC
CAGTACTCTCCACTCTTCCAGACAGAGTGGCACATCTTGAGGTACAGGCAGGTGCGGGCGG
GGTCTTGACCTCGGTGCGGACCACGCT

16446.1.edit

TCGAGCGGCCGCGCCCGGGCAGGTCTCTCAGAGCGGTAGCTGTTCTTATTGCCCCGGCAGC
CTCCATAGATNAAGTTATTGCANGAGTTCTCTCCACGTCAAAGTACCAGCGTGGGAAGG
ATGCACGGCAAGGCCAGTGACTGCGTTGGCGGTGCAGTATTCTTCATAGTTGAACATATC
GCTGGAGTGGACTTCAGAATCCTGCCTTCTGGGAGCACTGGGACAGAGGAATCCGCTGC
ATTCCTGCTGGTGGACCTCGGCCGCGACCACGCT

16446.2.edit

AGCGTGGTCCGCGGCCGAGGTCCACCAGCAGGAATGCAGCGGATTCCTCTGTCCCAAGTGC
TCCCAGAAGGCAGGATTCTGAAGACCCTCCAGCGATATGTTCAACTATGAAGAATACTG
CACCGCCAACGCAGTCACTGGGCCCTGGCGTGCATCCTTCCCACGCTGGTACTTTGACGTG
GAGAGGAATCCTGCAATAACTTCATCTATGGAGGCTGCCGGGGCAATAAGAACAGCTAC
CGCTCTGAGGAGGACCTGCCCGGGCGGCCGCTCGA

16447.1.edit

TCGAGCGGCCGCGCCCGGGCAGGTCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCG
AACTGGAATCCATCGGTCATGCTCTCGCCGAACCAGACATGCCTCTTGTCCTTGGGGTTCT
TGCTGATGTACCAGTTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACC
AGTCTCCATGTTGCAGAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGTCAATC
CAGTACTCTCCACTCTTCCAGCCAGAAATGGCACATCTTGAGGTACGGCCANGTGGGGCCGG
GGTCTTGACCTCGGCCGCGACACGCT

FIG. 15W

16447.2.edit

AGCGTGGTCGCGGCCGAGGTCAAGAAACCCCGCCCGCACCTGCCGTGACCTCAAGATGTG
CCACTCTGGCTGGAAGAGTGGAGAGTACTGGATTGACCCCAACCAAGGCTGCAACCTGGA
TGCCATCAAAGTCTTCTGCAACATGGAGACTGGTGAGACCTGCGTGTACCCCACTCAGCCC
AGTGTGGCCCAAGAAGACTGGTACATCAGCAAGAACCCCAAGGACAAGAGGCATGTCTGG
CTCGGCGAGAGCATGACCGATGGATTCCAGTTCGAGTATGGCGGCCAGGGCTCCGACCTT
CCCATGTGGACCTGCCCGGGCGGCCGCTCGA

16449.1.edit

AGCGTGGTCGCGGCCGAGGTCTGTGACAGTGGCACTGGTAGAAGNTCCAGGAACCTGA
ACTGTAAGGGTTCTTCATCAGTGCCAACAGGATGACATGAAATGATGTACTCAGAAGTGTG
CTGNAATGGGGCCCATGANATGGTTGNTGAGAGAGAGCTTCTTGTCTACATTGGCGGG
GTATGGTCTTGGCCTATGCCTTATGGGGGTGGCCGTTGNGGGCGGTGNGGTCCGCCTAAAA
CCATGTTCTCAAAGATCATTTGTTGCCCAACACTGGGTTGCTGACCANAAGTGCCAGGAA
GCTGAATACCATTTCCAGTGTCAATCCAGGGTGGGTGACGAAAGGGGTCTTTTGAAGTGT
GGAAGGAACATCCAAGATCTCTGNTCCATGAAGATTGGGGTGTGGAAGGGTTACAGTTG
GGGAAGCTCGCTGTCTTTTCTTCCAATCANGGGCTCGCTCTTCTGAATATTCTTCAGGGC
AATGACATAAAATGTATATTCCGGTTCCTCCGTTCCAGGCCAG

16450.1.edit

TCGAGCGGGCCCGCCCGGCCAGGTCCACCACACCCAATTCCTTGCTGGTATCATGGCAGCCGC
CACGTGCCAGGATTACCGGCTACATCAAGTATGAGAAGCCTGGGTCTCTCTCCAGAGA
AGTGGTCCCTCGCCCCCGCCCTGGTGTACAGAGGCTACTATTACTGGCCTGGAACCGGGA
ACCGAATATACAATTTATGTCAATGGCCCTGAAGAATAATCAGAAGAGCGAGCCCTGATTG
GAAGGAAAAAGACAGACGAGCTTCCCAACTGGTAACCTTCCACACCCCAATCTTCATG
GACCAGAGATCTTGGATGTTCTTCCACAGTTCAAAAGACCCCTTTCGTCAACCCACCTGG
GTATGACACTGGAAATGGTATTACGCTTCTGGCACTTCTGGTCAGCAACCCAGTGTGGG
CAACAAATGATCTTTGANGAACAATGCTTTAGGCGGACCACACCGGCCACAACGGGGCACC
CCCATAGGCCATAGGCCAAGAACAATCCGNCGAATGTAGGACAAGAAGCTCTNTCTCAN
ACAANCACTCTCATGGGCCCCCATTCANGACACTTCTGAGTACATCANTTCATGGCATCTG
GTGCCACTGATAAAAACCTTACAGTTA

16450.2.edit

AGCGTGGTCGCGGCCGAGGTCTGTGACAGTGGCACTGGTAGAAGTTCAGGAACCTGA
ACTGTAACGGTTCTTCATCAGTGCCAACAGGATGACATGAAATGATGTACTCAGAAGTGTG
CTGGAATGGGGCCCATCAGATGGTTCTGTGAGAGAGAGCTTCTTGTCTACATTGGCGGGG
TATGGTCTTGGCCTATGCCTTATGGGGGTGCCCGTTGTGGCGGTGTGGTCCGCCTAAAA
CATGTTCTCAAAGATCATTTGTTGCCCAACACTGGGTTGCTGACCAGAAGTGCCAGGAAG
CTGAATACCATTTCCAGTGTCAATCCAGGGTGGGTGACGAAAGCGGTCTTTTGAAGTGTG
GAAGGAACATCCAAGATCTCTGTTCCATGAAGATTGGGGTGTGGAAGGGTTACAGTTGG
GGAAGCTCGTCTGTCTTTTCTTCCAATCANGGGCTCGCTCTTCTGATTATTCTTCAGGGC
AATGACATAAAATGTATATTCCGNTCCCGGTCAGCCCAATAATAATAACCTCTGTGACA
CCANGGCGGGCCCCCAAGGANCAT

FIG. 15X

16451.1.edit

AGCGTGGTCGCGGCCGAGGTCTCACCAGAGGTACCACCTACAACATCATAGTGGAGGCA
CTGAAAGACCAGCAGAGGCATAAGGTTCCGGAAGAGGTTGTTACCGTGGGCAACTCTGTC
AACGAAGGCTTGAACCAACCTACGGATGACTCGTGCTTTGACCCCTACACAGTTTCCCATT
ATGCCGTTGGAGATGAGTGGGAACGAATGTCTGAATCAGGCTTTAAACTGTTGTGCCAGTG
CTTANGCTTTGGAAGTGGTCAATTCAGATGTGATTCATCTAGATGGTGCCATGACAATGGT
GTGAACTACAAGATTGGAGAGAAGTGGGACCGTCAGGGAGAAAATGGACCTGCCCCGGGC
GGCCGCTCGA

16451.2.edit

TCGAGCGGCCCGCCCGGGCAGGTCCATTTTCTCCCTGACGGTCCCACTTCTCTCCAATCTTGT
AGTTACACCAATTGTCTATGGCACCATCTAGATGAATCACATCTGAAATGACCACTTCCAAA
GCCTAAGCACTGGCACAACAGTTTAAAGCCTGATTGAGACATTGTTCCCACTCATCTCCA
ACGGCATAATGGGAAACTGTGTAGGGGTCAAAGCACGAGTCATCCGTAGGTTGGTTCAAG
CCTTCGNTGACAGAGTTGCCACGGTAACAACCTCTTCCCGAACCTTATGCCCTCTGTGGT
CTTTCAGTGCCTCCACTATGATGTTGTAGGTGGTACCTCTGGTGAGGACCTCGGCCGCGAC
CACGCT

16452.1.edit

AGCGTGGCCGCGGCCGAGGTCCATTCGCTGGAACGGCATCAACTTGGAAAGCCAGTGATCG
TCTCAGCCTTGGTTCTCCAGCTAATGGTGAATGGNGGTCTCAGTAGCATCTGTACACGAGC
CCTTCTTGGTGGGCTGACATTCCTCCAGACTGGTGACAACACCCCTGAGCTGGTCTGCTTGT
AAAGTGTCTTAAGAATCATACACACTCACTTCATAATTTGGCGNCCACCATAAGTCCTGATA
CAACCACGGAATGACCTGTTCAGGAAC

16452.2.edit

TCGAGCGGCCCGCCCGGGCAGGTCTCAGACCGGGTTCTGAGTACACAGTCAGTGTGGTTGC
CTTGACGATGATATGGAGAGCCAGCCCTGATTGGAACCCAGTCCACAGCTATTCTGCA
CCAAGTACCTGAAGTTCACTCAGGTACACCCACAAGCCTGAGCGCCCAGTGGACACCA
CCCAATGTTTCACTGATATCGAGTGGGGTGACCCCCAAGGAGAAGACCGGACCA
ATGAAAGAAATCAACCTTGCTCTGACAGCTCATCCGTGGTTGTATCAGGACTTATGGCGG
CCACCAAAATATGAAGTGAGTGTCTATGCTCTTAAGGACACTTTGACAAGCAGACCAGCTCA
GGGTGTTGTACCACTCTGGAGAAATGTCAGCCCAACAAGAAGGGCTCGTGTGACAGATGC
TACTGAGACCACCATCACCATTAGCTGGAGAACCAAGACTGAGACGATCACTGGCTTCCA
AGTTGATGCCGTTCCACCCAATGGACCTCGGCCCGCCACCACGCTT

FIG. 15Y

59

16453.1.edit

AGCGTGGTTCGCGGCCGAGGTCTGCCCCGAAGTGTACAGGGAAGATGTACATGTTA
TAGNTCTTCTCGAAGTCCCGGGCCAGCAGCTCCACGGGGTGGTCTCCTGCCTCCAGGCGCT
TCTCATTCTCATGGATCTTCTTACCCGCGAGTTCTGCTTCTCAGTCAGAAGGTTGTTGTCC
TCATCCCTCTCATAACAGGGTGACCAGGACGTTCTTGAGCCAGTCCCGCATGCGCAGGGGGA
ATTCGGTCAGCTCAGAGTCCAGGCAAGCGGGGATGTATTTGCAAGGCCCGATGTAGTCCA
AGTGGAGCTTGTGGCCCTTCTTGGTGCCCTCCAAGGTGCACTTTGTGGCAAAGAAGTGGCA
GGAAGAGTCGAAGGTCTTGTGTCAATTGCTGCACACCTTCTCAAACCTCGCCAATGGGGGCT
GGGCAGACCTGCCCCGGCGGCCGCTCGA

16453.2.edit

TCGAGCGGCCGCCCCGGGCAGGTCTGCCCCAGCCCCCATGGCGAGTTTGAGAAGGNGTGCA
GCAATGACAACAAGACCTTCGACTCTTCTGECACCTTCTTTGCCACAAAGTGCACCCTGGA
GGGCACCAAGAAGGGGCCACAAGCTCCACCTGGACTACATCGGGCCTTGCAAATACATCCC
CCCTTGCTGGACTCTGAGCTGACCGAATTCCTGCGCATGCGGGACTGGCTCAAGAAC
GTCTGGTCACCTGTATGAGAGGGATGAGGACAACAACTTCTGACTGAGAAGCANAAG
CTGCGGGTGAAGAANATCCATGAGAATGANAAGCGCTGNAGGCANGAGACCACCCCGT
GGAGCTGCTGCCCCGGGACTTCGAGAAGAATAACATGTACATCTTCCCTGTACACTGG
CAGTTCGGCCAGACCTCGCCCCGGACACGCT

16454.1.edit

AGCGTGGNTGCGGACGACGCCCCACAAAGCCATTGTATGTAGTTTTANTTCAGCTGCAAAN
AATACCNCCAGCATCCACCTTACTAACGAGCATATGCAGACA

16454.2.edit

TCGAGCGGTGCCCCGGGCAGGTCTGCCCCGATAGCACCGGGCATATTTTGAATGGATGA
CGTCTGGCACCTGAGCAGCCCAGCGAGCACTTGGTCTTAGTTGAGCAATTTGGCTAGGA
GGATAGTATGCAGCACGGTTCTGAGTCTGTGGATAGCTGCCATGAAGNAACCTGAAGGA
GGCGCTGGCTGGTANGGCTTGATTACAGGCTGGGAACAGCTCGTACACTTGCCATTCTCT
GCATATACTGGNTAGTCAGGCGAGCCTGCGGCTCTTCTTTGCGCTGAGCTAAAGCTACATA
CAATGGCTTTGNGGACCTCGCCCCGGACACGCTT

FIG. 15Z

16455.1.edit

TCGAGCGGGCCCGGGCAGGTCCATTTTCTCCCTGACGGTCCCCTTCTCTCCAATCTTGT
AGTTCACACCATTGTGATGACACCATCTAGATGAATCACATCTGAAATGACCACTTCCAAA
GCCTAAGCACTGGCACAACAGTTTAAAGCCTGATTGACATTCGTTCCCACTCATCTCCA
ACGGCATAATGGGAACTGTGTAGGGGTCAAAGCACGAGTCATCCGTAGGTTGGTTCAAG
CCTTCGTTGACAGAAGTTGCCCACGGTAACAACCTCTTCCCGAACCTTATGCCTCTGCTGGT
CTTTCAAGTGCTCCACTATGATGTTGTAGGTGGCACCTCTGGTGAGGACCTCGGCCCGGA
CCACGCT

16455.2.edit

AGCGTGGTTTGCGGCCGAGGTCTCACCANAGGTGCCACCTACAACATCATAGTGGAGGC
ACTGAAAGACCAGCAGAGGCATAAGGTTTCGGGAAGAGGTTGTTACCGTGGGCAACTCTGT
CAACGAAGGCTTGAACCAACCTACGGATGACTCGTGCTTTGACCCCTACACAGNTTCCCAT
TATGCCGTTGGAGATGAGTGGGAACGAATGTCTGAATCAGGCTTTAAACTGTTGTGCCAGT
GCTTANGCTTTGGAAGTGGTCATTTGAGATGTGATTATCTANATGGTGTGATGACAATGG
TGNGAACTACAAGATTGGAGAGAAAGTGNACCGTCAGGGGANAAAAATGGACCTGCCCGG
GCGGCNCGCTCGA

16456.1.edit

AGCGTGGTTCGGCGCCGAGGTCTGGCTTCTGCTCANGTGATTATCCTGAACCATCCAGGCC
AAATAAGCGCCCGCTATGCCCCGTGNAATTGGATTGCCACACGGCTCACATTGCATGCAAGTT
TGCTGAGCTGAAGGAAAAAGATTGATC

16456.2.edit

TCGAGCGGGCCCGGGCAGGTCCAAATGAAACAAACAGTTCTGAGACCGTTCTTCCACCA
CTGATTAAGAGTGGCGGNGCGGGCTATTAGGGAATAATTCATTTAGCCTTCTGAGCTTCT
GGGCAGACTTGGTGACCTTCCCAGCTCCAGCAGCTTCTGGTCCACTGCTTTGATGACACC
CACCGCAACTGTCTGTCTCATATCAGGAACAGCAAAGCGACCCAAAGGTGGATAGTCTGA
GAAGCTCTCAACACACATGGGCTTCCCAGGAACCATATCAACAATGGGCAGCATCACCAG
ACTTCAAGAATTTAAGGGCCATCTTCCAGCTTTTACCAGAACGGCGATCAATCTTTTCCTT
CAGCTCAGCAAACCTTGCAATGTGAGCCG

FIG. 15AA

16459.1.edit

TCGAGCGGCCGCCCCGGGCAGGTCCAGAGGGCTGTGCTGAAGTTTGCTGCTGCCACTGGAG
CCTCTCCAATTGCTGGCCGCTTCACTCCTGGAACCTTCACTAACCCAGATCCAGGCAGCCTT
CCGGGAGCCACGGCTTCTTGTGGNTACTGACCCAGGGCTGACCACCAGCCTCTCACGGAG
GCATCTTATGTTAACCTACCTACCATTTGCGCTGTGTAACACAGATTCTCCTCTGCGCTATGT
GGACATTGCCATCCCATGCAACAACAAGGGAGCTCACTCAGNNGGGGTTTGATGTGGTGA
TGCTGGCTCGGGAAGTTCTGCGCATGCGTGGCACCATTTCCTGTAACACCCATGGGANGN
CATGCCTGATCTGGACTTCTACAGAGATCCTGAAGAGATTGAAAAAGAAGAACAGGCTGN
TTGCTGANAAAGCAAGTGACCAAGGANGAAATTCANGGGTGAAANGGACTGCTCCCGCT
CCTGAATTCAGTCTACTCAACCTGANGNTGCAGACTGGTCTTGAAGGNGNACANGGGCC
CTCTGGGCCTATTTAAGCANCTTCGGTCGCGAACACGNT

16459.2.edit

AGCGTGNGTCGCGGCCGAGGTGCTGAATAGGCACAGAGGGCACCTGTACACCTTCAGACC
AGTCTGCAACCTCAGGCTGAGTAGCAGTGAATCAGGAGCGGGAGCAGTCCATTACCCCT
GAAATTCCTCCTTGGNCACTGCCTTCTCAGCAGCAGCCTGCTCTTTTTCAATCTCTTCA
GGATCTCTGTAGAAGTACAGATCAGGCATGACCTCCCATGGGTGTTACGGGAAATGGTG
CCACGCATGCGCAGAACTTCCCGAGCCAGCATCCACCACATCAAACCCACTGAGTGAGCT
CCCTTGTGTGTCATGGGATGGGCAATGTCCACATAGCGCAGAGGAGAATCTGTGTTACAC
AGCGCAATGGTAGGTAGGTTAACATAAGATGCCTCCCGAGAAAGCTGGTGGTCAGCCCTG
GGGTCAAGTAACCACAAGAAGCCGTGGCTCCCGGAAGGCTGCCTGGATCTGGTTAGTGAA
GGNTCCAGGAGTGAACCCGCGCAACAATTGGAGTGGCTTCAGTGGCAAGCAGCAAACTTCA
GCACAAGCCCTCTGGACCTGCCCCCGCGCGCTCGA

16460.1.edit

TCGAGCGGCCGCCCCGGGCAGGTCCAATTTCTCCCTGACCGNCCCACTTCTCTCCAATCTTGT
AGTTCACACCATTTGTCAATGGCACCATCTAGATGAATCACATCTGAAATGACCACTTCCAAA
GCCTAAGCACTGGCACAACAGTTTAAAGCCTGATTAGACATTCGTTCCCACTCATCTCCA
ACGGCATAATGGGAAACTGTGTAGGGGTCAAAGCACGAGTCATCCGTAGGTTGGTTCAAG
CCTTCGTTGACAGAGTTGCCCCAGGTAACAACCTCNTCCCCGAACCTTAAGCCTCTGCTGG
GCTTTCAGNCGCTCCACTATGATGNTGTAGGGGGGCACCTCTGGNGANGACCTCGGCGCG
GACCACGCT

16460.2.edit

AGCGTGCTCGCGGCCGAGGTCTCACCAGAGGTGCCACCTACAACATCATAGTGGAGGCA
CTGAAAGACCAGCAGAGGCATAAGGCTCGGGAAGAGGTTGTTACCGTGGGCAACTCTGTC
AACGAAGGCTTGAACCAACCTACGGATGACTCGTGCTTTGACCCCTACACAGTTTCCCAT
ATGCGGTTGGAGATGACTGGGAACGAATGTCTGAATCAGGCTTTAACTGTTGTGCCAGTG
CTTANGCTTTGGAAGTGGCTCATTCAGATGTGATTATCTAGATGGTGGCATGACAATGG
NGNGAACTACAAGATTGGAGAGAACTGGNACCGNCAGGAGAAAAATGGACCTGCCCGGG
CGGCCGCTCGA

FIG. 15BB

102

16461.1.edit

AGCGTGGTTCGCGGCCGAGGTCCACATCGGCAGGGTTCGGAGCCCTGGCCGCCATACTCGAA
CTGGAATCCATCGGTTCATGCTCTCGCCGAACCAGACATGCCTCTTGTCCTTGGGGTTCTTGC
TGATGTACCAGTTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACCAGT
CTCCATGTTGAGAAGACTTTGATGGCATCCAGGNTGCAACCTTGGTTGGGGTCAATCCAG
TACTCTCCACTCTTCCAGCCAGAGTGGCACATCTTGAGGTCACGGCAGGTGCGGNCGGGGG
NTTTGCGGCTGCCCTCTGGNCTTCGGNTGTNCTCNATCTGCTGGCTCA

16461.2.edit

TCGAGCGGCCGCCCCGGGCAGGTCTCGCGGTTCGCACTGGTGATGCTGGTCTGTGGTCCCC
CCGGCCCTCCTGGACCTCCTGGCCCCCTGGTCTCCAGCGCTGGTTTCGACTTCAGCTTC
CTGCCCCAGCCACCTCAAGAGAAGGCTCAGGATGGTGGCCGCTACTACCGGGCTGATGAT
GCCAATGTGGTTCTGTGACCGTGACCTCGAGGTGGACACCCTCAAGAGCCTGAGCCAG
CAGATCGAGAACATCCGGAGCCCCAGAGGGCAGNCGCAAGAACCCCGCCCGCACCTGCCGT
GACCTCAAGATGTGCCACTCTGACTGGAAGAGTGGAGAGTACTGGATTGACCCCAACCA
GCTGCAACCTGGATGCCATCAAAGTCTTCTGCAACATGGAGACTGGTGAGACCTGCGTGTA
CCCCACTCAGCCCAAGTGTGCCCAAAAAGAACTGGTACATCAGCAAGAACCCCAAGGACAA
GAAGCATGTCTGGTTCCGGCGAGAACATGACCGATGGATTCCAGTTTCGAGTATGGCGGGCA
GGGCTCCGACCCTGCCGATCGGGACCTTGGCCGCGAACACGCT

16463.1.edit

AGCGTGGNNCGCGCCGAGGTATAAATATCCAGNCCATATCCTCCCTCCACACGCTGANAG
ATGAAGCTGTNCAAAGATCTCAGGGTGGANAAAACCAT

16463.2.edit

TCGAGCGGCCGCCCCGGGCAGGTCTTCAGACTTGGACTGTGTCACTGCCAGGCTTCCAG
GGCTCCAACCTTGACAGACGGCTGTCTGTGGCACAGTCTCTGTAATCGCGAAAGCAACCATG
GAAGACCTGGGGCGAAAACACCATGGTTTATCCACCCTGAGATCTTTGAACAACCTTCATCT
CTCAGCGTGGCGAGGGAGGCTCTGGACTGGATATTCTACCTCGGCCGCGACCACGCT

FIG. 15CC

1.3

16464.1.edit

CGAGCGGGCGACCGGGCAGGTNCAGACTCCAATCCANANAACCATCAAGCCAGATGTCAG
AAGCTACACCATCACAGGTTTACAACCAAGGCACTGACTACAAGANCTACCTGCACACCTTG
AATGACAATGCTCGGAGCTCCCTGTGGTCAATCGACGCCTCCACTGCCATTGATGCACCAT
CCAACCTGCGTTTCTGGCCACCACACCAATTCCTTGCTGGTATCATGGCAGCCGCCACG
TGCAGGATTACCGGTACATCATCNAGTATGANAAGCCTGGGCCTCCTCCAGAGAAGNG
GTCCCTCGGCCCCGCCCTGNTGTCCCANAGGNTACTATTACTGNGCCNGCAACCGGCAACC
GATATCNATTTTGNCAATTGGCCTTCAACAATAATTA

16464.2.edit

AGCGTGGTTCGCGGCCGANGTCCTGTGAGAGTGGCACTGGTAGAAGTTCCAGGAACCCCTG
AACTGTAAGGGTTCTTCATCAGNGCCAACAGGATGACATGAAATGATGTACTCAGAAGTG
TCCTGGAATGGGGCCCATGAGATGGTTGTCTGAGAGAGAGCTTCTGNCCTGTCTTTTCC
TTCCAATCAGGGGCTCGCTCTTCTGATTATTCTTCAGGGCAATGACATAAAATTGTATATTG
GGTCCCGGNTCCAGGCCAGTAATAGTANCCTCTGTGACACCAGGGCGGNGCGGAGGGACC
ACTTCTCTGGGAGGAGACCCAGGCTTCTCATACTTGATGATGTAACCGGTAATCTCGGCAC
GTGGCGGCTGCCATGATACCAGCAAGGAATTGGGGTGTGGTGGCCAGGAAACGCAGGTTG
GATGGNGCATCAATGGCAGTGGAGGCCGTGATGACCACAGGGGGAGCTCCGACATTGTC
ATTCAAGGTG

16465.1.edit

AGCGTGGNCGCGGCCGAGGTGCAGCGCGGGCTGTGCCACCTTCTGCTCTCTGCCCCAACGAT
AAGGAGGGTNCCTGCCCCCAGGAGAACATTAACNTCCCCAGCTCGGCCTCTGCCCG

16465.2.edit

TCGAGCGCCCGCCCGCGGCAGGTTTTTTTGGTGAAGTGGNTACTTTATTGGNTGGGAAAG
GGAGAAGCTGTGGTCAAGCCCAAGAGGGAATACAGAGNCCCGAAAAAGGGGAGGGCAGGT
GGGCTGGAACAGACCGCAGGGCCAGGCAGAACTTTCTCTCCTCACTGCTCAGCCTGGTG
GTGGCTGGAGCTCANAAATTGGGAGTGACACAGGACACCTTCCACAGCCATTGCGCGCG
CATTTCACTGCCCAGGACACTGGCTGTCCACCTGGCACTGGTCCCGACAGAAGCCCCGAGC
TGGGGAAGTTAATGTTACCTGGCGCCAGGAACCTCTCTTATCATTTGNGCAGAGAGCAG
AAGGTGGCACAGCCCCGCGCTGCACCTCGGCTCCGACCACGCT

16466.2.edit

TCGAGCGCCCGCCCGGGCAGGTCCACCATAAGTCCTGATACAACCACGGATGAGCTGICA
GCAGCAAGGTTGATTTCTTTCAATGGTCCGGNCTTCTCCTTGGCGGNCACCCGCACTCGAT
ATCCAGTGAGCTGAACATTGGCTGGCCTCCACTGGGCGCTCAGGCT

16467.2.edit

TCGAGCGGTTCCCGCGGGCAGGTCCACCACACCCCAATTCCTTGCTGGTATCATGGCAGCCG
CCACGTGCCAGGATTACCGGCTACATCATCAAGTATGAGAAGCCTGGGTCTCCTCCAGAG
AAGCGGTCCCTCGGCCCCGCCCTGGTGTACAGAGGCTACTATTACTGGCCTGGAACCGGG
AACCGAATATACAATTTATGTCAATGNCCTGAAGAATAATCANNAANAGGGANCCCCCTGA
TTGGAAGGA

FIG. 15DD

104

Parameter	Unit	Value	Standard Error	t-value	p-value
Intercept		1.000	0.000	1.000	0.000
Age	Year	-0.001	0.000	-1.000	0.000
Gender		0.000	0.000	0.000	0.000
Marital Status		0.000	0.000	0.000	0.000
Education	Year	0.000	0.000	0.000	0.000
Income	Year	0.000	0.000	0.000	0.000
Health		0.000	0.000	0.000	0.000
Religion		0.000	0.000	0.000	0.000
Occupation		0.000	0.000	0.000	0.000
Region		0.000	0.000	0.000	0.000
Constant		1.000	0.000	1.000	0.000

02_16469.edit

03 16470.edit

02 16470.editt

05 16471.edit

TCGAGCGGCCGCCCGGGCAGGTCTCCCTCTTCGGGCCCAGGGGCAGCGCATAGTGGGAC
TCGTACCACTGTGGCTACGGGTGTGCTGTGGATGAGCACGATGCAATTCTTCACCAGGGTCT
TGGTACGAACCAGCTCGTTATTAGATGCCATTGTAGACAACATCGATGATCCTTGTITTTACG
AGTACAACACTCTGAGCCCCAGGACAAAATTCGCCAGTCCAACCTCAGGGCAGGTTATTT
TTGTTACCTCCCCGCACACGGACTGTGTGGATGCGGGCGGGGCCAAGCTGACTCCTGAGGA
ADAAGAGATTTTAAACAAAAACGATCTAAAAAAATTCAGAAGAAATATGATGAAAGGA
AAAAGAATGCCAAAATCAGCAGTCTCCTGGAGGACCAGTTCCAGCAGGGCAAGCTTCTTG
CGTGCAATCGCTTCAAGGCCCGGCACAGTGTGACCGAGCAGATGGCTATGTGCTAGAGGGCA
AAGAAGTGGAGTTCTATCTTAAGAAAATCAGGCCCCAGAAATGGTGNGTCTTCAACTAATC
CAAGGCGGAGTTTCAGACAGTGCAAATCAGCAAAAACATTGATACTGNTGGCCAAATTTA
TTGGTGCAGGGCTTGCACANTANGACNNGGCTGGCTTGGCGCTTGGATTGGNACAAGCT
TTGGCAGCCTTTTCTTTTGGTTTTGCCAAAACCTTTTGNATGAAGANACCTNNGGCGGA
CCCCTTAACCGATTCCACNCCNCGNCGGCTTCTANGGNCCCNCTTG

FIG. 15EE

06_16471.edit

AGCGTGGTCGCGGCCGAGGTCTGCTGCTTCAGCGAAGGGTTTCTGGCATAACCAATGATA
AGGCTGCCAAAGACTGTTCCAATACCAGCACCAGAACCAGCCACTCCTACTGTTGCAGCAC
CTGCACCAATAAAATTTGGCAGCAGTATCAATGTCTCTGCTGATTGCACTGGTCTGAAACTC
CCTTTGGATTAGCTGAGACACACCATTCTGGGGCCCTGATTTTCTAAGATAGAACTCCAAC
TCTTTGCCCTCTAGCACATAGCCATCTGCTCGGTACACTGTCCCGGCCCTGAAGCGATGC
ACGCAAGAAGCTTGGCCCTGCTGGAAGTCTCTCCAGGAGACTGCTGATTTTGGCATTCTT
TTTCCTTTTCATCATATTTCTTCTGAATTTTTTAGATCGTTTTTGTTTAAAAATCTCTTCTTCC
TCAGGAGTCAGCTTGGCCCCCGCCGATCCACACAGTCCCGTGTGCGGGGAGGTAACAAGA
AATACCGTGCCCTGAGGTTGGACGTGGGGAATTTCTCTGGGGCTCAGAGTGGTGTACTCG
TAAAAACAAGGATCATCGATGGTGNCTACAATGCATCTAATAACGAGCTGGGTCCGACCCA
AAGAACCTGGNGAANAAATGGATCGNCTCATCGACAGGACACCGTACCCGACAGGGGNA
CGANTCCCACTATGCGCTTGGCCCTGGGCCGCAANAAAGGAAAAGTGGCCGGGCGGCCNT
CGAAAGCCCCAATTNTGGAAAAATCCATCACTGGGNGGCCNGTCGAGCATGCATNTAN
AGGGGCCCATTCCTCCCTNANN

07_16472.edit

TCGAGCGGCCGCCCCGGGCAGGTCCCCAACCAAGGCTGCAACCTGGATGCCATCAAAGTCT
TCTGCAACATGGAGACTGGTGAGACCTGCGTGTACCCCACTCAGCCAGTGTGGCCCAGA
AGAACTGGTACATCAGCAAGAACCCCAAGGACAAGAGGCATGTCTGGTTCGGCGAGAGCA
TGACCGATGGATTCCAGTTCGAGTATGCGGCCAGGGCTCCGACCCTGCCGATGTGGACCT
CGGCCGCGACACGCT

08_16472.edit

AGCGTGGTCGCGGCCGAGGTCCACATCGGCAGGGTGGAGCCCTGGCCGCCATACTCGAA
CTGGAATCCATCGGTATGCTCTCGCCCAACCAGACATGCCTCTTGTCTTGGGGTTCTTGC
TGATGTACCAGTTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACCAGT
CTCCATGTTGCAGAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGACCTGCCCG
GGCGGCCGCTCGA

09_16473.edit

TCGAGCGGCCGCCCCGGGCAGGTCCACCACACCCAATTCCTTGGTATCATGGCAGCCGC
CACGTGCCAGGATTACCGGCTACATCATCAAGTATGAGAAGCCTGGGTCTCTCCAGAGA
AGTGGTCCCTCGGCCCGCCCTGGTGTACACAGGCTACTATTACTGGCCTGGAACCGGGA
ACCGAATATACAATTTATGTCAATGCCCTGAAGAATAATCAGAAGAGCGAGCCCTGATTG
GAAGGAAAAAGACAGACGAGCTTCCCCAAGTGGTAACCCCTTCCACACCCCAATCTTCATG
GACCAGAGATCTTGGATGTTCTTCCACAGTTCAAAAGACCCCTTTCGTACCCACCCCTGG
GTATGACACTGGAAATGGTATTCAGCTTCTTGGCACTTCTGGTCAGCAACCCAGTGTGGG
CAACAAATGATCTTTGAGGAACATGGNTTtagggcgaccacaccggccacacacggccacc
CCCATAAAGGCATAGGCCAAGACCATACCCGCGGAATGTAGGACAAGAAGCTNTNTNTCAN
ACACCATNTNATGGGCCCCATTCCAGGACACTTCTGAGTACATCATTTATGNCACTGTGG
CACTTGATGAAAACCCCTTACAGTTAGGGTCTGGAACTTTACCAGCCCTNTTACAGGAC
TNGCCCGGACNCTTAAGCCNATTNACCCCTGGGGCGTTCTANGGTCCCACTCGNNCACTG
GNGAAAATGGCTACTGTN

FIG. 15FF

[illegible]

12_16474.edit

13_16473.edis

FIG. 15GG

14_16475.edit

AGCGTGGTTCGCGGCCGAGGTGTTTTATGACGGGCCCCGGTGCTGAAGGGCAGGGAACAAC
TGATGGTGCTACTTTGAACCTGCTTTTCTCTTTTTCACAAAGAGTCTCATGTCTGA
TATTTAGACATGATGAGCTTTGTGCAAAAGGGGAGCTGGCTACTTCTCGCTCTGCTTCATC
CCACTATTATTTTGGCACAACAGGAAGCTGTTGAAGGAGGATGTTCCCATCTTGGTCAGTC
CTATGCGGATAGAGATGTCTGGAAGCCAGAACCATGCCAAATATGTGTCTGTGACTCAGG
ATCCGTCTCTGCGATGACATAATATGTGACGATCAAGAATTAGACTGCCCCAACCCAGAA
ATTCCATTTGGAGAATGTTGTGACGTTTGCCACAGCCTCCAACCTGCTCTACTCGCCCTCC
TAATGGTCAAGGACCTCAAGGCCCAAGGGAGATCCAGGCCCTCCTGGTATTCTGGGGAG
AAATGGTGACCTGGTATTCCAGGACAACCAGGGTCCCCTGGTTCTCCTGGCCCCCTGGA
ATCNGGNGAATCATGCCCTACTGGTCTCAAACCTATTCTCCANATGATTATATGATGTC
AAGTCTGGGATAGCNAGTANGGANGGACTCGCAGGCTATTCTGGACCANACCTGCCGGGG
GGGCGTTGAAAGCCCGAATCTGCANANTNCTTACACTGGCGGGCGTCGAGCTGCTTT
AAAAGGGCCATTCCNCTTTAGNGNGGGGGANTACAATTACTNGGCGGGCGTTTANANCG
CGNGNCTGGGAAAT

15_16476.edit

AGCGTGGTTCGCGGCCGAGGTCCACATCGGCAGGGTCCGAGCCCTGGCCGCCATACTCGAA
CTGGAATCCATCGGTCA TGCTCTGCGCGAACCAGACATGCCTCTTGCTTTGGGGTTCTTGC
TGATGTACCAGTTCTTCTGGCCCACTGGGCTGAGTGGGGTACACGCAGGTCTCACCAGT
CTCCATGTTGCAGAAGACTTTGATGGCATCCAGTTGCCAGCCTTGGTTGGGGTCAATCCAG
TACTCTCCACTCTTCCAGTCAGAGTGGCACA TCTTGAGGTCACGGCAGGTGCGGGCGGGGT
TCTTGGCGGTGCCCCCTCTGGGCTCCGGA TGTCTCGATCTGCTGGCTCAGGCTCTTGAGGGTG
GTGTCCACCTCGAGGTACGGGTACCGAACCACATTGGCATCATCAGCCCGGTAGTAGCGGC
CACCATCGTGAGCCTTCTCTTGANGTGGCTGGCGCAGGAAGTGAAGTCGAAACCAGCGCT
GGGAGGACCAGGGGGACCAANAGGTCCAGGAAGGGCCCCGGGGGACCAACAGGACCAG
CATCACCAAGTGGCAGCCCGGAGAACCTGCCCGGCCGNCCTCGAA

16_16476.edit

TCGAGCGNCGCCCGGGCAGGTCTCGCGGTGGCACTGGTGATGCTGGTCTCTGTTGGTCCCC
CCGCCCCCTCTGGACCTCTGCTGCCCCCTGGTCTCTCCAGCGCTGGTTTCGACTTCAGCTTC
CTGCCCCAGCCACCTCAAGACAAGGCTCAGGATGGTGGCCGCTACTACCGGGCTGATGAT
GCCAATGTGGTTCTGTGACCGTGACCTCGAGGTGGACACCACCTCAAGAGCCTGAGCCAG
CAGATCGAGAACATCCGGAGCCCAAGGGCAGCCGCAAGAACCCCGCCCCGACCTGCCGT
GACCTCAAGATGTGCCACTCTGACTGGAAGAGTGGAGAGTACTGCAATTGACCCCAACCAA
GGCTGCAACCTGGATGCCATCAAAGTCTTCTGCAACATGGAGACTGGTGAGACCTGCGTGT
ACCCCACTCAGCCCAAGTGTGCGCCAGAGCAAGCACTGGATGCAATTCAGTTCCAGTATGGCGGCC
AGAGCCATGTCTGGTTGCGCCAGAGCAAGCACTGGATGCAATTCAGTTCCAGTATGGCGGCC
AGGGCTCCCACCTGCGCATGTGGACCTCGCGCCCGGACCACTT

FIG. 15HH

17_16477.edit

TNGAGCGGCGCCCGGGCAGGNTGNNAACGCTGGTCTGCTGGTCCTCTGGCAAGGCTG
GTGAAGATGGTCACCCCTGGAAAACCCGGACGACCTGGTGAGAGAGGAGTTGTTGGACCAC
AGGGTGCTCGTGGTTTCCCTGGAACTCCTGGACTTCTGGCTTCAAAGGCATTAGGGGACA
CAATGGTCTGGATGGATTGAAGGGACAGCCCGGTGCTCCTGGTGTGAAGGGTGAACCTGG
TGCCCTGGTGAAAATGGAACCTCCAGGTCAAACAGGAGCCCGTGGGCTTCTGGTGAGAG
AGGACCGTGTGGTGCCCTGGCCCANACCTCGGCCGCGACCACGCTAAGCCCGAATTTCC
AGCACACTGGNGGCCGTTACTANTGGATCCGAGCTCGGTACCAAGCTTGGCGTAATCATG
GTCATAGCTGTTTCTGNGTGAAATTGTTATCCGCTCACAATTCACACANCATACGAAGC
CGGAAAGCATAAAGTGTAAGCCCTTGGGGTGCTAATGAGTGAGCTAACTCNCATTAAATT
GCGTTGCGCTCACTGCCCGCTTTTCCANNNGGGAACCNCTGGCNTNGCCNGCTTGCNTTAA
NTGAAATCCGCCNACCCCGGGGAAAAGNCGGTTTGCGTATTTGGGGCNCTTTTCCCTTT
CCTCGGNTTACTTGANTTANTGGGCTTTGCGNCTTCGGGTTGNGGCGANCNGGTTCAACN
TCACNCCAAAGGNGGNAANACGGTTTCCCANAAATCCGGGGGNTANCCCAANGNAAAAC
ATNNGNCNAANGGGCT

18_16477.edit

AGCGTGGTTNGCGGCCGAGGTCTGGGCGCAGGGGCACCAACACGTCTCTCTCACCAGGAA
GCCACGGGCTCCTGTTTGACCTGGAGTTCCATTTTACCAGGGGCACCAGGTTACCCCTT
CACACCAGGAGCACCGGGCTGTCCCTTCAATCCATNCAGACCATTTGTGNCCCCTAATGCCT
TTGAAGCCAGGAAGTCCAGGAGTTCCAGGGAACACCAGGAGCACCCCTGTGGTCCAACAAC
TCCTCTCTCACCAGGTCTGTCGGGTTTCCAGGTTGACCATCTTACCAGCCTTGCCAGGA
GGACCAGCAGGACCAGCGTTACCAACCTGCCCGGGCGGGCGCTCGA

21_16479.edit

TCGACCGGCGCCCGGGCAGGTCCAATTTCTCCTGACGGTCCCCTTCTCTCCAATCTTGT
AGTTCACACCATTTGTCAATGGCACCATCTAGATGAATCACAATCTGAAATGACCCTTCCAAA
GCCTAAGCACTGGCACAAACAGTTTAAAGCCTGATTCAGACATTCGTTCCCACTCATCTCCA
ACGGCATAATGGGAACCTGTGTAGGGGTCAAAGCACGAGTCATCCGTAGGTTGGTTCAAG
CCTTCGTTGACAGAGTTGCCACGGTAACAACCTCTTCCCGAACCTTATGCCTCTGCTGGTC
TTTCAGTGCCTCCACTATGATGTTGTAGGTGGCACCTCTGGTGAGGACCTCGGCCCGGACC
ACGCT

22_16479.edit

AGCGTGGTCCGGCCGAGGTCTCACCAGAGGTGCCACCTACAACATCATAGTGGAGGCA
CTGAAAGACCAGCAGAGGCATAAGGTTCCGGAAAGAGGTTGTTACCGTGGGCAACTCTGTC
AACGAAGGCTTGAACCAACCTACGGATGACTCGTGCTTTGACCCCTACACAGTTTCCCAT
ATGCCGTTGGAGATGAGTGGGAACGAATGTCTGAATCAGGCTTTAAACTGTTGTGCCAGTG
CTTAGGCTTTGGAAGTGGTCATTTCAAGATGTGATTCATCTAGATGGTGCCATGACAATGG
TGTGAATAACAAGATTGGAGAGAAGTGGGACCGTCAGGGAGAAAATGGACCTGCCCGGG
CCGGCCGCTCGA

24_16480.edit

TCGAGCGNCGCCCGGGCAGGTCCAGTAGTGCCTTCGGGACTGGGTTACCCCCAGGTCTG
CGGCAGTTGTACAGCGCCAGCCCCGCTGGCCTCCAAAGCATGTGCAGGAGCAAATGGCA
CCGAGATATTCCTTCTGCCACTGTTCTCCTACGTGGTATGTCTTCCCATCATCGTAACACGT
TGCCTCATGAGGGTCACACTTGAAATCTCCTTTTCCGTTCCCAAGACATGTGCAGCTCATTT
GGCTGGCTCTATAGTTTGGGGAAAGTTTGTGAACTGTGCCACTGACCTTTACTTCCTCCT
TCTCTACTGGAGCTTTCGTACCTTCCACTTCTGCTGTTGGTAAAATGGTGGATCTTCTATCA
ATTTCAATTGACAGTACCCACTTCTCCCAAACATCCAGGGAAAATAGTGATTTACAGAGCGATT
AGGAGAACCAAATTATGGGGCAGAAATAAGGGGCTTTTCCACAGGTTTTCCTTTGGAGGA
AGATTTCAAGTGGTGACTTTAAAAGAATACTCAACAGTGTCTTCATCCCCATAGCAAAAGAA
GAAACNGTAAATGATGGAANGCTTCTGGAGATGCCNNCATTTAAGGGACNCCCAGAACTT
CACCATCTACAGGACCTACTTCAGTTTACANNAAGNCACATANTCTGACTCANAAAGGAC
CCAAGTAGCNCCATGGNCAGCACTTTNAGCCTTTCCCTGGGGAAAANNTTACNTTCTTAA
ANCCTNCGCCNNGACCCCTTAAGNCCAAATTNTGGAAAANTTCCNTNCNNCTGGGGGGC
NGTTCNACATGCNTTTNAAGGGCCCAATTNCCCCNT

25_16481.edit

TCGAGCGGCGCCCGGGCAGGTGTGGAGTCCAGCACGGGAGGCGTGGTCTTGTAGTTGT
TCTCCGGCTGCCCCATTGCTCTCCACTCCACGGCGATGTGCTGGGATAGAAGCCTTTGAC
CAGGCAGGTACGGCTGACCTGGTTCTGGTCACTCCTCCCGGATGGGGGCAGGGTGTAC
ACCTGTGGTTCTCGGGGCTCCCTTTGGCTTTGGAGATGGTTTTCTCGATGGGGCTGGGA
GGGCTTTGTGGAGACCTTCCACTTGTACTCCTTGGCATTAGCCAGTCTGGTGACAGGAC
GGTGAGGACGCTGACCACACGGTACGTGCTGTTGTACTGCTCCTCCCGCGGCTTTGTCTTG
GCATTATGCACCTCCACGCGGTCCACGTACCAGTTGAACTTGACCTCAGGGTCTTCGTGGC
TCACGTCCACCACCACCGCATGTAACCTCAGACCTCGGCCCGGACCACGCT

26_16481.edit

AGCGTGGTCCGGGCGGAGGTCTGAGGTTACATCCGTGGTGGTGGACGTGAGCCACGAAGA
CCCTGAGGTCAAGTTCAACTGGTACGTGGACGGCGTGGAGGTGCATAATGCCAAGACAAA
GCCCCGGGAGGAGCAGTACAACAGCACGTACCGTGTGCTACCGTCTCACCCTCCTGCA
CCAGGACTGGCTGAATGCCAAGGAGTACAAGTCCAAGGTCTCCAACAAGCCCTCCACG
CCCCATCGAGAAAACCATCTCCAAAGCCAAAGGGCAAGCCCCGAGAACCACAGGTGTACA
CCCTGCCCCCATCCCGGGAGGAGATGACCAAGAACCAGGTACGCTGACCTGCCTGGTCA
AAGCCTTCTATCCCAGCGACATCGCCGTGGAGTGGGAGAGCAATGGGCAGCCCGAGACA
ACTACAAGACCACGCTCCCGTGTGACTCCGACACCTGCCCGGGCGGGCGCTCGA

27_16482.edit

TCGAGCGGCGCCCGGGCAGGTGAATGGCTCCTCGCTGACCACCCCGGTGCTGGTGGTGG
GTACAGAGCTCCGATGGGTGAAACCATTCACATAGAGACTGTCCCTGTCCAGGGTGTAGG
GGCCAGCTCAGTGATGCCCTCGGTACGCTGGCTCAGCTTCCAGTACAGCCGCTCTCTGTC
CAGTCCAGGGCTTTTGGGCTCAGGACGATGGGTGCAGACAGCATCCACTCTGGTGGCTGC
CCCATCCTTCTCAGGCCTGAGCAAGGTCACTCTCCAACCAGAGTACAGAGAGCTGACACT
GGTGTCTTGAACAAGGGCATAAGCAGACCTGAAGGACACCTCGGCCGCGACCACGCT

FIG. 15JJ

170

23_16482.edit

AGCGTGGTCCGCGGCCGAGGTGTCCTTCAGGGTCTGCTTATGCCCTTGTTCAAGAACACCAG
TGTCAGCTCTCTGTACTCTGGTTGCAGACTGACCTTGCTCAGGCCTGAGAAGGATGGGGCA
GCCACCAGAGTGGATGCTGTCTGCACCCATCGTCTGACCCCAAAGCCCTGGACTGGACA
GAGAGCGGCTGTACTGGAAGCTGAGCCAGCTGACCCACGGCATCACTGAGCTGGGCCCCCT
ACACCTGGACAGGGACAGTCTCTATGTCAATGGTTTCACCCATCGGAGCTCTGTACCCAC
CACCAGCACCGGGGTGGTCAGCGAGGAGCCATTCAACCTGCCCGGGCGGCCGCTCGA

29_16483.edit

AGCGTGGTCCGCGGCCGAGGTCTGTGAGAGTGGCACTGGTAGAAGTTCCAGGAACCCTGA
ACTGTAAGGGTTCTTCATCAGTGCCAAACAGGATGACATGAAATGATGTACTCAGAAAGTGTC
CTGGAATGGGGCCCATGAGATGGTTGTCTGAGAGAGAGCTTCTTGCTCTACATTGGCGGGG
TATGGTCTTGGCCTATGCCCTTATGGGGGTG⁵CCGTTGTGGGCGGTGTGGTCCGCCTAAAAC
CATGTTCTCTCAAAGATCATTTGTTGCCAAACACTGGGTTGCTGACCAGAAAGTGCCAGGAAG
CTGAATACCATTTCCAGTGTCATACCCAGGGTGGGTGACGAAAGGGGTCTTTTGAAGTGTG
GAAGGAACATCCAAGATCTCTGGTCCATGAAGATTGGGGTGTGGAAGGGTTACCAGTTGG
GGAAGCTCGTCTGTCTTTTCTTCCAAATCAGGGGCTCGCTCTTCTGATTATTCTTCAGGGC
AATGACATAAAATTGTATATTCCGGTCCCGGTTCAGGCCAGTAATAGTAGCCTCTGTGACAC
CAGGGCGGGGCGGAGGGACCCCTTCTNTTGGAAAGAGACCAGCTTCTCATACTTGATGATGA
GNCCGGTAATCCTGGCACGTGCGNGGTTCATGATNCCACCAAGGAAATNGGNGGGGGNG
GACCTGCCCGGGCGGGCGTTTCNAAAGCCCAATTCCACACACTTGGNGGCCGTACTATGGATC
CCACTCNGTCCAACCTTGGNGGAATATGCCATAACTTTT

31_16484.edit

TCGAGCGGCCGCGCGGCCGAGGTCTCTGACCTTTTCACCAAAGTGGGAACGTGTAATCCGTCT
CCACAGACAAGGCCAGGACTCGTTTGTACCGGTGATGATAGAATGGGGTACTGATGCAA
CAGTTGGGTAGCCAAATCTGCAGACAGACACTGGCAACATTGCGGACACCCCTCCAGGAAGC
GAGAATGCAGAGTTTCTCTGTGATATCAAGCACTTCAGGGTTGTAGATGCTGCCATTGTC
GAACACCTGCTGGATGACCAGCCCAAAGGAGAAAGGGGGAGATGTTGAGCATGTTACGCAG
CGTGGCTTCGCTGGCTGCCACTTCTCTCCAGTCTTGATCAGACCTCGGCGCGGACCACGCT

37_16487.edit

AGCCTGGTCCGCGGCCGAGGTCTGTCTACAGTCTCAGGACTCTACTCCCTCAGCAGCGTG
GTGACCGTGCCCTCCAGCAACTTCGGCACCCAGACCTACACCTGCAACGTAGATCAACAAGC
CCAGCAACACCAAGCTGGACAAGAGAGTTGAGCCCAAATCTTGTGACAAAACCTCACACAT
GCCCACCGTGCCCAAGCACCTCAACTCTGGGGGGACCGTCAGTCTTCTCTCCCCCGCAT
CCCCCTTCCAAACCTGCCCGGGGGGGCGCTCG

FIG. 15KK

000150 000150 000150

MI

38_16487.edit

CGAGCGGCCCGCCCGGGCAGGTTTGGAAGGGGGATGCGGGGGAAGAGGAAGACTGACGGT
CCCCCAGGAGTTCAGGTGCTGGGCACGGTGGGCATGTGTGAGTTTTGTCACAAGATTGG
GCTCAACTCTCTTGTCCACCTTGGTGTGGCTTGTGATCTACGTTGCAGGTGTAGGTC
TGGGTGCCGAAGTTGCTGGAGGGCAGGTCACCACGCTGCTGAGGGAGTAGAGTCCTGAG
GACTGTAGGACAGACCTCGGCCGCGACCACGCT

39_16488.edit

NGGNNGGTCCGGNCNGNCAGGACCACTCNTCTTCGAAATA

41_16489.edit

AGCGTGGTCGCGGCCGAGGTCTCACTTGCCCTCTGCAAAGCACCGATAGCTGCGCTCTGG
AAGCGCAGATCTGTTTTAAAGTCTGAGCAATTTCTCGCACCAGACGCTGGAAGGGAAGTT
TGCGAATCAGAAGTTCAGTGGACTTCTGATAACGTCTAATTCACGGAGCGCCACAGTACC
AGGACCTGCCCCGGCGGCCGCTCGA

42_16489.edit

TCGACCGGCCCGCCCGGGCAGGTCTCTGCTACTGNGGCGCTCCGTCAAATTAGACGTTATCA
GAAGTCCACTGAACCTTCTGATTCGCAAACCTTCCTTCACGCTCTGGTGCGAGAAATTGCT
CAGGACTTTAAAACAGATCTGCGCTTCAGAGCGCAGCTATCGGTGCTTTGCAGGACGCA
AGTGAGGACCTCGGCCCGCGACCACGCT

45_16491.edit

TCGACCGGCCCGCCCGGGCAGGTCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCG
AACTGGAATCCATCGGTCACTCTCTCGCCGAACCAGACATGCCTCTTGTCTTGGGGTTCT
TGCTGATGTACCAGTTCTTCTGCGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTCACC
AGTCTCCATGTTCCAGAAGACTTTCATGCCATCCAGGTTGCAGCCTTGGTTGGGGTCAATC
CAGTACTCTCCACTCTTCCAGTCAGAGTGGCACATCTTGAGGTACGGCAGGTGCGGGCGG
GGTCTTGACCTCGGCCCGCGACCACGCT

FIG. 15LL

47/

46_16491.edit

GTGGGNTTGAACCCNTTINANCTCCGCTTGGTACCGAGCTCGGATCCACTAGTAACGGCCG
CCAGTGTGCTGGAATTCGGCTTAGCGTGGTCGCGGCCGAGGTCAAGAACCCCGCCGAC
CTGCCGTGACCTCAAGATGTGCCACTCTGACTGGAAGAGTGGAGAGTACTGGATTGACCC
CAACCAAGGCTGCAACCTGGATGCCATCAAAGTCTTCTGCAACATGGAGACTGGTGAGAC
CTGCGTGTACCCCACTCAGCCCACTGTGGGCCAGAGAAGAACTGGTACATCAGCAAGAACCC
CAAAGACAAGAGGCATGTCTGGTTCGGCGAGAGCATGACCGATGGATTCCAGTTCGAGTA
TGGCGGCCAGGGCTCCGACCTGCCGATGTGGACCTGCCCGGGCGGCCGCTCGA

47_16492.edit

AGCGTGGTCCGGGCCGAGGTCTGGGATGCTCCTGCTGTACAGTGAGATATTACAGGATC
ACTTACGGAGAAACAGGAGGAAATAGCCCTGTCCAGGAGTTCACTGTGCCTGGGAGCAAG
TCTACAGCTACCATCAGCGGCTTAAACCTGGAGTTGATTATACCATCACTGTGTATGCTG
TCACTGGCCGTGGAGACAGCCCCGCAAGCAGCAAGCCAATTTCCATTAATTACCGAAGAG
AAATTGACAAACCATCCAGATGCAAGTGACCGATGTTTACAGGACAACAGCATTAGTGCA
AGTGGCTGCCTTCAAGTTCCTCTGTTACTGGTTACAGAGTAACCACCACTCCCAAAAATGG
ACCAGGACCAACAAAACTAAACTGCAGGTCCAGATCAAACAGAAATGACTATTGAAG
GCTTGACGCCACAGTGGAGTATGTGGTAAAGTGTCTATGCTCAGAATCCAAGCGGAGAG
AAGTCAGCCTCTGGTTCAGACTGNAAGTAACCAACATTGATCGCCTAAAGGACTGGCATTG
ACTGATGNCGATGCCGATTCATCAAAATTCNTGGGAAAACCCACAGGGGCAAGTTTNC
ANGTCNAGGNGGACCTACTGACCCCTCAGGATGCAATCCTTGACTNTTCTTNNCCTGAT
GGGGAACCAAACTTNAAACTTGAAGGACCTGCCCGGGCGGCCGTNCAAAACCCAATT
CCACCCCTTGGGGCGCTTCTATGGGNCCTACTCGGACCAAACTTGGGGTAAN

48_16492.edit

TCGAGCGCCCGCCCGGGCAGGTCTTCCAGGTCTCCAGTGTCTTCTTCACCATCAGGTGCA
GGGAATACCTCATGGATTCCATCTCAGGGCTCAGTAGGTACCCCTGTACCTGGAACCTT
GCCCCTGTGGGCTTTCCCAAGCAATTTGATGGAATCGGCATCCACATCAGTGAATGCCAG
TCCTTTAGGGCGATCAATGTTGGTACTGCACTCTGAACCAAGGCTGACTCTCTCCGCTT
GGATTCTGAGCATACACACTAACCACATACTCCACTGTGGCTGCAAGCCTTCAATAGTCA
TTTCTGTTTGATCTCGACCTCCAGTTTACTTTTGTGGTCTGCTCCATTTTGGGAGTG
GTGGTACTCTGTAACCAAGTAACAGGGGAACCTTGAAGGCACCCACTTGACACTAATGCTGT
TGTCTGAACATCGGTCACTTCCATCTGGGATGGTTTGTCAATTTCTGTTCCGTAATTAATG
GAAATTGGCTTGGTGGTTCGGGGGCTTGTCTCCACGGCCAGTGACAGCATACACAGTGATG
GTATAATCAACTCCAGGTTTAAAGCCGCTGATGGTAGCTGAACTTTGCTCCAGGCACAAGT
GAACCTCTGACAGGCTATTTCCTTCTGTTCTCCGTAAGTGATCCTGTAATATCTCACTGGG
ACAGCAGGANGCATTCAAAACCTTCGGCGGACCCCTAAGCCGAATTNTGCAATATNC
ATCACTAGCGCGCGCTCCANCAATCAAAAAGGCCCAATCNCCTATAGGGAGTNT
ANTACAATTNG

FIG. 15MM

000130" T03E950

11/1

60 16498.edit

61-15499-2dit

62 16483.edic

FIG. 1500

63_16500.edit

AGCGTGGTCGCGGCCGAGGTCCATTTTCTCCCTGACGGTCCCACTTCTCTCCAATCTTG TAG
TTCACACCATTGT CATGGCACCATCTAGATGAATCACATCTGAAATGACCACTTCCAAAGC
CTAAGCACTGGCACAACAGTTTAAAGCCTGATTCAGACATTCGTTCCCACTCATCTCCAAC
GGCATAATGGGAAACTGTGTAGGGGTCAAAGCACGAGTCATCCGTAGGTTGGTTCAAGCC
TTCGTTGACAGAGTTGCCCACGGTAACAACCTCTTCCCGAACCTTATGCCTCTGCTGGTCTT
TCAGTGCCTCCACTATGATGTTGTAGGTGGCACCTCTGGTGAGGACCTGCCCCGGGCGGCC
GCTCGA

64_16493.edit

AGCGTGGTCGCGGCCGAGGTGTGCCCCAGACCAGGAATTCGGCTTCGACGTTGGCCCTGTC
TGCTTCCTGTAAACTCCCTCCATCCCAACCTGGCTCCCTCCACCCAACCAACTTTCCCCC
AACCCGGAAACAGACAAGCAACCCAACTGAACCCCTCAAAGCCAAAAAATGGGAG
ACAATTCACATGGACTTTGGAAAAATATTTTTTCTTTGCATTCTCTCAAACCTTAGTT
TTTATCTTTGACCAACCGAACATGACCAAAAAACCAAAAGTGACCTGCCCCGGGCGGCCGCTC
GA

64_16500.edit

TCGAGCCGCGCCCGGGCAGGTCTCACCAGAGGTGCCACCTACAACATCATAGTGGAGG
CACTGAAAGACCAGCAGAGGCATAAGCTTCGGGAAGAGGTTGTTACCGTGGGCAACTCTG
TCAACGAAGGCTTGAACCAACCTACGGATGACTCGTGCTTTGACCCCTACACAGTTTCCCA
TTATGCCGTTGGAGATGAGTGGGAACGAATGTCTGAATCAGGCTTTAAACTGTTGTGCCAG
TGCTTAGGCTTTGGAAGTGGTCAATTCAGATGTGATTCTAGATGGTGCCATGACAATG
GTGTGAACCTACAAGATTGGAGAGAAGTGGGACCGTCAGGGACAAAAATGGACCTCGGCCG
CGACCACGCT

FIG. 15PP

16501.edit

TCGAGCGGGCGCCCGGGCAGGTACCGGGGTGGTCAGCGAGGAGCCATTCACTGAACTT
CACCATCAACAACCTGCGGTATGAGGAGAACATGCAGCACCCCTGGCTCCAGGAAGTTCAA
CACCACGGAGAGGGTCCTTCAGGGCCTGCTCAGGTCCCTGTTCAAGAGCACCAGTGTGGC
CCTCTGACTCTGGCTGCAGACTGACTTTGCTCAGACCTGAGAAACATGGGGCAGCCACTG
GAGTGGACGCCATCTGCACCCTCCGCCTTGATCCCACTGGTCTGGACTGGACANANAGCG
GCTATACTTGGGAGCTGANCCNAACCTTTGGCGGNGACNCCNCTT

16501.2.edit

GAGGACTGGCTCAGCTCCCAGTATAGCCGCTCTCTGTCCAGTCCAGGACCAGTGGGATCAA
GGCGGAGGGTGCAGATGGCGTCCACTCCAGTGGCTGCCCATGTTTCTCAAGTCTGAGCAA
AGNCAGTCTGCAGCCAGAGTACAGAGGGCCAACTGGTGTCTTGAACAGGGACCTGAG
CAGGCCCTGAAGGACCCCTCTCCGTGGTGTGAACTTCTGGAGCCAGGGTGTGCATGTTT
TCCTCATACCGCAGGTTGTTGATGGTGAAGTTCAGTGTGAATGGCTCCTCGCTGACCACCC

16502.1.edit

AGCGTGGTGGCGGGCGGAGGTCCACCACACCCAATTCCTTGGTGGTATCATGGCAGCCGCCA
CGTGCCAGGATTACCGGCTACATCACTCAAGTATGAGAAGCCTGGGTCTCCTCCCAGAGAA
GTGGTCCCTCGGCCCCCGCCCTGGTGTACAGAGGCTACTATTACTGGCCTGGAACCGGGAA
CCGAATATACAATTTATGTCAATTCGCTGAAGAATAATCAGAAGAGCGAGCCCTGATTGG
AAGGAAAAAGACAGACGAGCTTCCCCAACTGGTAACCCCTCCACACCCCAATCTTCATGG
ACANANANCTTGGATNGTCTTCACTGGTTNAAAAAACCTTTTCGCCCCCCCACCTTG
GGGATTAACCTTGGGAAANGGGGATTNACCNCTTC

16502.2.edit

TCGAGCGGGCGCCCGGGCAGGTCTCTGTACAGTGGCACTGGTAGAAGTTCAGGAACCCCT
GAACTGTAAGGGTTCTTCATCACTGCCAACAGCATGACATGAAATGATGTACTCAGAAGT
GTCTGGAATGGGGCCCATGAGATGGTGTCTGACAGAGAGCTTCTTGCTCTACATTCCGGC
GGGTATGGTCTTGGCTATCCCTTATGGGGGTGGCCGTTGTGGGCGGTGTGGTCCGCCTAA
AACCATGTTCTCAAAGATCAATTTGTTGCCCAACACTGGGTGCTGACCAGAAGTGCCAGG
AAGCTGAATACCATTTCCAGTGTCTATCCAGGGNGGGTGACCAAAAGGGGGTCNTTTNGA
CCTGGNGAAAGGAACCATCCAAAANCTCTGNCCCATG

FIG. 15QQ

16503.1.edit

AGCGTGGNCGCGGCCGAGGTCTGAGGATGTAACTCTTCCCAGGGGAAGGCTGAAGTGCT
GACCATGGTGCTACTGGGTCTTCTGAGTCAGATATGTGACTGATGNGAACTGAAGTAGGT
ACTGTAGATGGTGAAGTCTGGGTGTCCCTAAATGCTGCATCTCCAGAGCCTTCCATCATT
CCGTTTCTTCTTTTCTATGGGATGAGACACTGTTGAGTATTCTCTAAAGTCACCACTGAAA
TCTTCTCCAAAGGAAAACCTGTGGAAAAGCCCTTATTTCTGCCCCATAATTTGGTTCTCC
TAATCNCTCTGAAATCACTATTTCCCTGGAANGTTTGGGAAAAANNGGGCNACCTGNCAN
TGGAAANTGGATANAAAGATCCCACCATTTTACCCAACNAGCAGAAAGTGGGAANGGTAC
CGAAAAGCTCCAAGTAANAAAAAGGAGGGAAGTAAAGGTCAAGTGGGCACCAGTTTCAA
ACAAAACCTTTCCCCAACTATANAACCCA

16503.2.edit

AAGCGGCCCGCCCGGGCAGGNNCAGNAGTGCTTCCGGGACTGGGNTCACCCCCAGGTCTGC
GGCAGTTGTACAGCGCCAGCCCCGCTGGCCTCCAAAGCATGTGCAGGAGCAAATGGCAC
CGAGATATTCCTTCTGCCACTGTTCTCTACGTGGTATGTCTTCCCATCATCGTAACACGTT
GCCTCATGAGGGTCACACTTGAATTCCTTTTCCGTTCCCAAGACATGTGCAGCTCATTTG
GCTGGCTCTATAGTTTGGGAAAAGTTTGTGAAACTGTGCCACTGACCTTTACTTCTCTCTT
CTCTACTGGAGCTTTCGGTACCTTCCACTTCTGCTGNTGGNAAAAAGGGNGGAACNTCTTA
TCAATTTTCAATTGGACAGTANCCCNCTTTCTNCCCAAAACATNCAAGGGAAAAATATTGATTN
CNAGAGCGGATTAAGGAACAACCCNAAATTATGGGGGCCAGAAATAAAGGGGGCTTTTCCA
CAGGTNTTTTCT

16504.1.edit

TCGAGCGGCCCGCCCGGGCAGGTCTGCAGGCTATTGTAAGTGTCTGAGCACATATGAGAT
AACCTGGGCCAAGCTATGATGTTCCATACGTTAGGTGTATTAATGCACTTTTGAAGTCCA
TCTCAGTGGATGACAGCCTTCTCACTGACAGCAGAGATCTTCTCACTGTGCCAGTGGGCA
GGAGAAAGAGCATGCTGCCACTGGACCTCGGCCGCGACCAAGCT

16504.2.edit

AGCGTGGTGGCGGCCGAGGTCCAGTCCAGCATGCTCTTTCTCTGCCCAGTGGCACAGTG
AGGAAGATCTCTGCTGTCACTGACAAGGCTGTCTCACTGAGATGGCAGTCAAAAGTGC
ATTTAATACACCTAACGTATCGAACAATCATAGCTTGGCCCAGGTTATCTCATATGTGCTCA
GAACACTTACAATAGCCTGCAGACCTGCCCGGGCGGCCGCTCGA

FIG. 15RR

75

16507.1.edit

AGCGTGGTCGCGGCCGAGGTCAAGAACCCCGCCCGCACCTGCCGTGACCTCAAGATGTGC
CACTCTGACTGGAAGAGTGGAGAGTACTGGATTGACCCCAACCAAGGCTGCAACCTGGAT
GCCATCAAAGTCTTCTGCAACATGGAGACTGGTGAGACCTGCGTGTACCCCACTCAGCCCA
GTGTGGCCCAGAAGAACTGGTACATCAGCAAGAACCCCAAGGACAAGAGGCATGTCTGGT
TCGGCGAGAGCATGACCGATGGATTCCAGTTCGAGTATGGCGGCCAGGGCTCCGACCCTG
CCGATGTGGACCTGCCCGNCCCGNCCGCTCGAAAAGCCCAATTTCAGNCACACTTGG
CCGGCCGTTACTACTG

16507.2.edit

TCGAGCGGCGCCCGGGCAGGTCCACATCGGCAGGGTCCGAGCCCTGGCCGCCATACTCG
AACTGGAATCCATCGGTCTGCTCTCGCCGAACCAGACATGCCTCTTGTCTTGGGGTTCT
TGCTGATGTACCAAGTCTTCTGGGCCACACGGGCTGAGTGGGGTACACGCAGGTCTCACC
AGTCTCCATGTTGCAGAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGTCAATC
CAGTACTCTCCACTCTTCCAGTCAGAGTGGCACATCTTGAGGTACCGGCAGGTGCGGGCGG
GGTCTTGACCTCGGCCCGGACACGCT

16508.1.edit

CGAGCGGCGCCCGGGCAGGTCCCCCCCCCTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
TT

16508.2.edit

AGCGTGGTCCCGGCCGAGGTCTGGCAATCCTTCGACTTCTCTCCAGCCGAGCTTCCCAGAA
CATCACATATCACTGCAAAAATAGCAATGCATACATGGATCAGGCCAGTGGAATGTAAA
GAAGGCCCTGAAGCTGATGGGCTCAAATGAAGGTGAATCAAGGCTGAAGGAAATAGCA
AATTCACCTACACAGTCTCGACGATGGTTGCACGAAACACACTGGGGAAATCGAGCAAAA
CAGTCTTTGAAATCGAACACGCAAGGCTGTGAGACTACCTATTGTAGATATTGCACCCTA
TGACATTGGTGGTCTGATCAAGAAATTTGGTGTGGACGTTGGCCCTGTTTGTCTTTTATAAA
CCAAACTCTATCTGAAATCCCAACAAAAAAATTTAACTCCATAATGTGNTCCTCTTGTCT
AATCTTGGCAACCAGTGCAAGTGACCGACAAAAATCCAGTTATTTATTTCCAAAATGTTTG
GAAACAGTATAATTTGACAAAGAAAAAAGGATACTTCTTTTTTTGGCTGGTCCACCAAA
TACAATTCAAAAGGCTTTTTGGTTTTATTTTTTANCCAATTCCAATTCAAAATGTCTCAA
TGGNGCTTATAATAAAATAAACTTTCACCCCTTTTTNTGAT

FIG. 15TT

16509.1.edit

AGCGTGGTCCGCGCCGAGGTCTGGGATGCTCCTGCTGTACAGTGAGATATTACAGGATC
ACTTACGGAGAAACAGGAGGAAATAGCCCTGTCCAGGAGTTCACTGTGCCTGGGAGCAAG
TCTACAGCTACCATCAGCGGCCCTTAAACCTGGAGTTGATTATACCATCACTGTGTATGCTG
TCACTGGCCGTGGAGACAGCCCCGCAAGCAGCAAGCCAATTTCCATTAATTACCGAACAG
AAATTGACAAACCATCCCAGATGCAAGTGACCGATGTTCAAGACAACAGCATTAGTGTA
AGTGGCTGCCTTCAAGTTCCCTGTTACTGGTTACAGAAAGTAACCACCACTCCCCAAAATG
GACCAGGACCAACAAAACTAAACTGCAGGTCCAGATCAAACAGAAAAATGGACTATTG
AAGGCTTGCAGCCACAGTGGAAGTATGTGGNTAGGNGTCTATGCTCAGAATCCCAAGCC
GGAGAAAGTCAGCCTTCTGGTTTAGACTGCAGTAACCAACATTGATCGCCCTAAAGGACT
GGNCATTCACTGGATGGTGGATGTCCAATTC

16509.2.edit

TCGAGCGGCCCGCCCGGGCAGGTCTTGCAGCTCTGCAGNGTCTTCTTACCATCAGGTGCA
GGGAATAGCTCATGGATTCCATCCTCAGGGCTCGAGTAGGTACCCTGTACCTGGAAACTT
GCCCCGTGTGGGCTTTCCCAAGCAATTTTGATGGAATCGACATCCACATCAGNGAATGCCAG
TCCTTTAGGGCGATCAATGTTGGTTACTGCAGTCTGAACCAGAGGCTGACTCTCTCCGCTT
GGATTCTGAGCATAGACACTAACCACATACTCCACTGTGGGCTGCAAGCCTTCAATAGTCA
TTTCTGTTTGATCTGGACCTGCAGTTTTAAGTTTTTGGTGGTCTGNNCCATTTTTGGGAAG
TGGGGGGTTACTCTGTAACCACTAACAGGGGAACCTGAAGGCAGCCACTTGACACTAATG
CTGTTCTCTGAACATCGGTCACCTGCATCTGGGATGGTTTTGACAATTTCTGTTCCGGCA
AATTAATGGAAATGGCTTCTGCTTGGCGGGCTGNTCCACGGGCCAGTGACACCATA
C

16510.1.edit

TCGAGCGGCCCGCCCGGGCAGGTCTTGCAGCTCTGCAGTGTCTTCTTACCATCAGGTGCA
GGGAATAGCTCATGGATTCCATCCTCAGGGCTCGAGTAGGTACCCTGTACCTGGAAACTT
GCCCCGTGTGGGCTTTCCCAAGCAATTTTGATGGAATCGACATCCACATCAGTGAATGCCAG
TCCTTTAGGGCGATCAATGTTGGTTACTGCAGTCTGAACCAGAGGCTGACTCTCTCCGCTT
GGATTCTGAGCATAGACACTAACCACATACTCCACTGTGGGCTGCAAGCCTTCAATAGTCA
TTTCTGTTTGATCTGGACCTGCAGTTTTAAGTTTTTGGTGGTCTGNNCCATTTTTGGGGAA
GGGCTGGTTACTCTTGTAAACCACTAACAGGGGAACCTGAAGCAGCCACTTGACACTAATG
CTGGTGGCCTGAACATCGGTCACCTGCATCTGGGATGGTTTTGGTCAATTTCTGTTCCGGTAA
TAATGGGAAATGGCTTACTGGCTTGGCGGGCTGTCTCCACGGNCAGTGACAAGCATA
ACAGGNGATGGGTATAATCAACTCCAGTTTAAGGCCNCTGATGGTA

16510.2.edit

ACCGTGGTCCGCGCCGAGGTCTGGGATGCTCCTGCTGTACAGTGAGATATTACAGGATC
ACTTACGGAGAAACAGGAGGAAATAGCCCTGTCCAGGAGTTCACTGTGCCTGGGAGCAAG
TCTACAGCTACCATCAGCGGCCCTTAAACCTGGAGTTGATTATACCATCACTGTGTATGCTG
TCACTGGCCGTGGAGACAGCCCCGCAAGCAGTAAGCCAATTTCCATTAATTACCGAACAG
AAATTGACAAACCATCCCAGATGCAAGTGACCGATGTTCAAGACAACAGCATTAGTGTA
AGTGGCTGCCTTCAAGTTCCCTGTTACTGGTTACAGAGTAACCACCACTCCCCAAAATGG
GACCAGGACCAACAAAACTAAACTGCANGGTCCAGATCAAACAGAAATGACTATTG
AAGGCTTGCAGCCACAGTGGAAGTATGTGGGTTAGTGCTATGCTCAGAATNCCAAGCGG
AGAGAGTCAGCCTCTGGTTCAGACT

FIG. 15UU

000T001-1000000

16511.1.edit

TCGAGCGGCCGCGCCGGGCAGGTACGGCTCTCAGGACGTCACCACCATGGCCTGGGCTCT
GCTCCTCCTCACCCTCCTCACTCAGGGCACAGGGTCCCTGGGCCCAGTCTGCCCTGACTCAG
CCTCCCTCCGCGTCCGGGTCTCCTGGACAGTCAGTCACCATCTCCTGCACTGGAACAGCA
GTGACGTTGGTGCTTATGAATTTGTCTCCTGGTACCAACAACACCCAGGCAAGGCCCCCAA
ACTCATGATTTCTGAGGTACTAAGCGGCCCTCAGGGGTCCCTGATCGCTTCTCTGGCTCC
AAGTCTGGCAACACGGCCTCCCTGACCGTCTCTGGGCTCCANGCTGAGGATGANGCTGATT
ATTACTGGAAGTCTATATGCAGGCAACAACAATTGGGTGTTCCGGCGGAAGGGACCAAGCT
GACCGTNTAAAGGTCAAGCCCAAGGCTTGCCCCCTCGGTCACTCTGTTCCCACCTCCTCT
GAAGAAGCTTTCAAGCCAACAANGNCACACTGGGTGTGTCTCATAAGTGGACTTTCTACCC

16511.2.edit

AGCGTGGTCCGCGGCCGAGGTCTGTAGCTTCTGTGGGACTTCCACTGCTCAGGCGTCAGGCT
CAGGTAGCTGCTGGCCGCGTACTTGTGTTGCTTTGNTTGGAGGGTGTGGTGGTCTCCACT
CCCGCCTTGACGGGGCTGCTATCTGCCCTCCAGGCCACTGTCACGGCTCCCGGTAGAAGT
CACTTATGAGACACACCAGTGTGGCCTTGTGGCTTGAAGCTCCTCAGAGGAGGGTGGGA
ACAGAGTGACCGAGGGGGCCAGCCTTGGGCTGACCTAGGACGGTCACTTGGTCCCTCCGC
CGAACACCCAATTGTTGTTGCTGCTATGAGCTGCAGTAATAATCAGCCTCATCCTCAGC
CTGGAGCCCAGAGACNGTCAAGGGAGGGCCGCTGTTGCCAAGACTTGGGAAGCCAGANAAG
CGATCAGGGACCCCTGAGGGCCGCTTTACNGACCTCAAAAAATCATGAATTTGGGGGGCC
TTTGCTGGGNGTTGGTTGGTNACCAGNAAAAACAAAATTTATAAAGCACCAACGTCCT
GCTGGTTTCCAGTGCANGAANATGGTGAACCTGAANTGTCC

16512.1.edit

AGCGTGGTCCGCGGCCGAGGTCCAGCATCAGGAGCCCCGCTTGCCGGCTCTGGTCATCGCC
TTTCTTTTTGTGGCCTGAAACGATGTATCAATTCGCACTAGCAGAACTGCCGTCTCCACTG
CTGTCTTATAAGTCTGCAGCTTCACAGCCAATGGCTCCCATATGCCCACTTCTTTCATGTCC
ACCAAAGTACCCGTCTCACCATTACACCCAGGTCTCACAGTTCTCCTGGGTGTGCTTGG
CCCCAAGGGAGGTAAAGTANACGGATGCTGCTGCTCCACAGTTCTGGATCAGGGTACGAG
GAATGACCTCTAGGGCCTCGCCNACAAACCCCTGTATGACCTGCCCGGGCGGGCCCGCTC
GA

16512.2.edit

TCGAGCGGCCGCGCCGGGCAGGTCCATACAGGGCTGTTGCCCAAGGCCCTAGAGGNCATTCC
TTGTACCCTGATCCAGAAGTGTGGGACGAGCCATCCGTCTACTTACCTCCCTTCGGGCC
AAGCACACCCAGGAGAAGTCTCAGACCTGGCGTGTAAATGGNGAGACGGGTACTTTGGT
GACATGAAGCAACTGGGCATATGGGAGCCATTGGCTGNGAACCTGCANACTTATAAGACA
GCAGTGGAGACGGCAGTTCTGCTACTGCCAATTGATGACATCGTTTCAGGCCACAAAAAG
AAAGGCGATGACCANAGCCGCCAAGGCGGGCTTCTGATGCTGGACCTCGGCCGCCGAC
CAAGCTT

FIG. 15VV

16514.1.edit

AGCGTGGTCCGGCCGAGGTCCACTAGAGGTCTGTGTGCCATTGCCAGGCAGAGTCTCTG
CGTTACAACTCCTAGGAGGGCTTGCTGTGCGGAGGGCTGCTATGGTGTGCTGCGGTTCA
TCATGGAGAGTGGGGCCAAAGGCTGCGAGGTGTGGTGTCTGGGAACTCCGAGGACAGA
GGGCTAAATCCATGAAGTTTGTGGATGGCCTGATGATCCACAGCGGAGACCCTGTAACTA
CTACGTTGACACTGCTGTGCGCCACGTGTTGCTCANACAGGGTGTGCTGGGCATCAAGGTG
AAGATCATGCTGCCCTGGGACCCANCTGGCAAAAATGGCCCTTAAAAACCCCTTGCCNTG
ACCACGTGAACCAATTTGTGNGAACCCEAAGATGAANATACTTGCCACCACCCCCCATTC

16514.2.edit

TCGAGCGGGCCCGCCGGGCAGGTCTGCCAAGGAGACCCTGTTATGCTGTGGGGACTGGCTG
GGGCATGGCAGGCGGCTCTGGCTTCCCACCTTCTGTTCTGAGATGGGGGTGGTGGGCAGT
ATCTCATCTTTGGGTTCCACAATGCTCAGTGGTCAGGCAGGGGCTTCTTAGGGCCAATCT
TACCAGTTGGGTCCCAGGGCAGCATGATCTTACCTTGATGCCACAGCACACCCTGTCTGAG
CAACACGTGGCGCACAGCAGTGTCAACGTAGTAAACAGGGTCTCCGCTGTGGATCAT
CAGGCCATCCACAACTTCATGGATTTAGCCCTCTGTCTCGGAGTTTCCAAAAACCCAC
AACCTCGCCAGCCTTTGGGCCCCACTTCTCATGAATGAAACCGCAGCACACCAATTANCA
GGCCCTTCCGCACAGGNAAGCCCTTCTAAGGAGTTTGTAAACGCAAAAAACTCTTGCTT
GGGGCAAAATGGGCACACAGACCTNTANTGGACCTTGGNCCGCGAACCACCGCTT

16515.1.edit

AGCGTGGTCCGGCCGAGGTCTGCCCCCTCTGSCAAGGCTCGTGAAGATGGTCACCCTGG
AAAACCCGGACCACTGGTGAGAGAGGAGTTGTTGACACACAGGGTGGCTCGTGGTTTCCC
TGGAACTCCTGGACTTCTGCGCTTCAAAGGCATTAGGGGACACAATGGTCTGGATCGATTG
AAGGGACAGCCCCGTGCTCTCTGCTGTAAGGGTGAACCTGGNGCCCCCTGGTGAAAATGGA
ACTCCAGGTCAAACAGGAGCCCCGNGGCTTCTGNGAGAGAGGACGTGTTGGTGGCCCT
GCCCCANACCTGCCCCGGGGCGGCTGNAAGGCGAAATCCAGNACACTGGCGGGCGNT
ACTANTGGAATCCGAACCTTGGGTACCAAGGCTTGGCCGTAATCATGGCCATAGCTTGTTC
CTGGGGNGGAAAATGGTATTCCGCTTCCAAATCCACACAACATACCGAACC CGGAAAGCA
TTAAAGTGTAAAAGCCCTGGGGGGGCTAAATGANGTGAGCNTAACTCNCATTTAAATGG
CGTTGCGCTTCACTGCCCCGCTTTTCCAGTCCGGGNA

16515.2.edit

TCGAGCGGGCCCGCCGGGCAGGTCTGGGGCAGGGCCACCAACACGTCTCTCTCACCAGGA
AGCCCACGGGCTCTGTTTGACCTGGAGTTCCATTTTACCAGGGGCACCAGGTTACCCCT
TCACACCAGGAGCACCGGGCTGTCCCTTCAATCCATCCAGACCAATTGTGNGCCCTAATGCC
TTTGAAGCCAGCAAGTCCAGGAGTTCCAGCGAAACCAGGACCCCTGTGGTCCAACAAC
TCCTCTCTCACCAGGTCTGCGGCTTTTCCAGGGTACCATCTTACCAGCCTTGCCAGGA
GGGCCAGACCTCGCCCCCGGACCCAGCT

FIG. 15WW

47

16516.1.edit

ANCGTGGTCGCGGCCGAGGTCTCACCAGAGGTGNCACCTACAACATCATAGTGGAGGCA
CTGAAAGACCANCAGAGGCATAAGGTTCCGGGAAGAGG

16516.2.edit

TCGAGCGGGCCCCGGGCAGGTCCATTTTCTCCCTGACGGTCCCACTTCTCTCCAATCTTGT
AGTTCACACCATTTGTCATGGCACCATCTAGATGAATCACATCTGAAATGACCACTTCCAAA
GCCTAAGCACTGGCACAACAGTTTAAAGCCTGATTGACATTCGTTCCCACTCATCTCCA
ACGGCATAATGGGAAACTGTGTAGGGGTCAAAGCAGAGTCATCCGTAGGTTGGTTCAAG
CCTTCGTTGACAGAGTTGTCCACGGTAACAACCTCTTCCCGAACCTTATGCCTCTGTGGTC
TTTCAGTGCCTCCACTATGATGTTGTAGGTGGCACCTCTGGTGAGGACCTCNGNCCNGAAC
AACGCTTAAGCCCGNATTCTGCAGAATAATCCCATCACACTTGGCGGCCGCTTCGANCATG
CATCNTAAAAGGGGGCCCCAATTTCCCCCTTATAAGNGAANCCGTATTTNCCAATTTCACTG
GNCCCCCGNTTTTACAAACGNCGGTGAACTGGGGAAAAACCCTGGCGGTTACCCAACTT
TAATCGCCNTTGGCAGCACAAATCCCCCTTTTCGNCCANCNTGGGCGTAAATAACCGAAAA

16517.1.edit

ANCGNGGTGCGCGGCCGANGTNTTTTCTTNTTTTTT

16518.1.edit

AGCGTGGTCGCGGCCGAGGTCTGAGGTTACATGCGTGGTGGTGACGTGAGCCACGAAGA
CCCTGAGGTCAAGTTCAACTGGTACGTGGACGGCGTGGAGGTGCATAATGCCAAGACAAA
GCCGCGGGAGGAGCACTACAACAGCACGTACCGGGNGGTCACCGTCCTCACCGTCCTGCA
CCAGAAATTGGTTGAATGGCAACGAGTACAAGNGCAAGGTTTCCAAACAAAGCCNTCCCCAGC
CCCCNTCGAAAAAACCATTTCCAAAGCCAAAGGGCAGCCCCGAGAACCACAGGTGTACAC
CCTGCCCCCATCCCCGGGAGGAAAAGANCAANAACNCGTTACGCCTTAACTTGGCTTGGTC
NAANGCTTTTATCCCAACGNACTTCCCCCNTGGAANTGGGAAAAACCAATGGGGCCAANC
CGAAAAACAATTACAANAACCCC

16518.2.edit

TCGACCGGGCCCCCGGGCAGGTGTCCGAGTCCAGCACGGGAGGCGTGGTCTTGTAGTTGT
TCTCCGGCTGCCCAATTGCTCTCCCACTCCACGGCGATGTCCCTGCCATAGAAGCCTTTGAC
CAGGCAGGTACAGGTGACCTGGTTCTTGGTCATCTCTCCCGGATGGGGGCAGGGTGAA
CACCTGGGGTTCTCGGGGCTTCCCTTTGGTTTGAANAATGTTTTCTCGATGGGGGCTGG
AAGGGCTTTGTTGNAACCTTCCACTTCACTCTTGCCATTACCCAGNCCTGGNCCAGGA
CGNGAGGACNCTNACCACACGGAACCGGGCTGGTGGACTGCTCC

FIG. 15XX

16519.1.edit

AGCGTGGTCCGGGACGANGTCCTGTGTCAGAGTGGNACTGGTAGAAGTTCCANGAACCCCTGA
ACTGTAAGGGTTCTTCATCAGTGCCAAACAGGATGACATGAAATGATGTACTCAGAAGNGN
CCTGGAATGGGGCCCCATGANATGGTTGCC

16519.2.edit

TCGAGCGGGCCCCGGGGCAGGTCCACCACACCCAAATTCCTTGCTGGTATCATGGCAGCCGC
CACGTGCCAGGATTACCGGCTACATCATCAAGTATGAGAAGCCTGGGTCTCCTCCCAGAGA
AGTGGTCCCTCGGGCCCCGCTGGTGTACAGAGGCTACTATTACTGGCCTGGAACCGGGA
ACCGAATATACAATTTATGTCAATTGCCCTGAAGAATAATCAGAAGAGCGAGCCCCCTGATTG
GAAGGAAAAAGACAGACGAGCTTCCCCAACTGGTAACCCCTTCCACACCCCAATCTTCATG
GACCAGAGATCTTGGATGTTCTTCCACAGTTCAAAAGACCCCTTTCGGCACCCCCCTGG
GTATGAACCTGGGAAAANGGNANTTAANCTTTCCTGGCA

16520.1.edit

AGCGTGGTCCGGGCGGAGGTCTGGGATGCTCCTGCTGTACAGTGAGATATTACAGGATC
ACTTACGGAGAAACAGGAGGAAAATAGCCCTGTCCAGGAGTTCACTGTGCCTGGGAGCAAG
TCTACAGCTACCATCAGCGCCCTTAAACCTGGAGTTGATTATACCATCACTGTGTATGCTG
TCACTGGCCGTGGAGACACCCCCGCAAGCAGCAAGCCAAATTTCCATTAATTACCGAACAG
AAATTGACAAACCATCCCAGATGCAAGTGACCGATGTTCAAGGACAACAGCATTAGTGTC
AGTGGCTGCCTTCAAGGTNCCCTGGTACTCGGTTACAGANTAACCACCCTCCCAAAAATG
GACCAGGAACCAAAAACTTAAACTGCAGGGTCCAGATCAAAACAGAAATGACTATTGA
ANGCTTGCAGCCACAGTGGGAGTATGNGGCTAGTGNCTATGCTTCAGAATCCAAGCGGA
AAAANGTCAACCCCTTNTGGGTTCAA

16520.2.edit

TCGAGCGGGCCCCGGGGCAGGTCTGCTGAGCTCTGCAGTGTCTTCTTCACCATCAGGTGCA
GGGAATAGCTCATGGATTCCATCTTCAGGGCTCGAGTAGGTACCCCTGTACCTGGAAACTT
GCCCCGTGCGGCTTTCCCAAGCAATTTGATGGAAATCGACATCCACATCAGTGAATGCCAG
TCCTTAGGGCGATCAATGTTGGTTACTCCAGNCTGAACCAGAGGGCTGACTCTCTCCGCTT
GGATTCTGAGCATACACACTAACCACATACTCCACTGTGGGCTCCAANCCTTCAATAANNC
ATTTCTGTTTGATCTGGACC

16521.2.edit

TCGAGCGGGCCCCGGGGCAGGTCTGGTGGGCTCTGGCACACGCACATGGGGGNGTTGNT
CTNATCCAGCTGCCCCAGCCCCCATTTGCCAGTTTGAGAAGGTGTCCAGCAATGACAACAA
NAGCTTCGACTCTTCTGCCACTTCTTTGCCACAAAGTGCACCCTGGAGGGCACCAAGAAG
GGCCACAAGCTCCACCTGGACTACATCGGGCCTTGCAAATACATCCCCCTTGCCTGGACT
CTGAGCTGACCGAATTCCTCCCTTCCGGGACTGGCTCAAGAACCCTCCTGGCACCC
TTGTATCANAGGGATGAAGACACNACCC

FIG. 15YY

000789" T099E950

119

16522.1.edit

AGCGTGGTCCGCGGCCGAGGTCTGTCCTACAGTCCTCAGGACTCTACTCCCTCAGCAGCGTG
GTGACCGTGCCCTCCAGCAACTTCGGGCACCCAGACCTACACCTGCAACGTAGATCACAAGC
CCAGCAACACCAAGGTGGACAAGAGAGTTGAGCCCCAAATCTTGTGACAAAACCTCACACAT
GCCCACCGTGCCGACCTGAACTCCTGGGGGGACCGTCAGTCTTCCTCTTCCCCCGCAT
CCCCCTTCCAAACCTGCCCGGGCGGCGCTCGAAAGCCGAATTCAGCACACTGGCGGCGCG
GTACTAGTGGANCCNAACCTTGGNANCCAACCTGGNGGAANTAATGGGCATAANCTGTTTC
TGGGGGGAAATTGGTATCCNGTTTACAATTCCNCACAACATACGAGCCGGAAGCATAAA
AGNGTAAAAGCCTGGGGGNGGCCTANTGAAGTGAAGCTAAACTCACATTAATTNGCGTTG
CCGCTCACTGGCCCCGCTTTTCCAGC

16522.2.edit

TCGAGCGGCCCGCCCGGCCAGGTTTGAAGGGGGATGCGGGGGAAGAGGAAGACTGACGG
TCCCCCAGGAGTTCAGGTGCTGGGCACGGTGGGCATGTGTGAGTTTTGTCACAAGATTG
GGCTCAACTCTCTTGTCCACCTTGGTGTGCTGGGCTTGTGATCTACGTTGCAGGTGTAGGT
CTGGGNGCCGAAGTTGCTGGAGCGCACGGTCAACACGCTGCTGAGGGAGTAGAGTCTGA
GGACTGTANGACAGACCTCGGCCGNGACCAGCTAAGCCGAATTCTGCAGATATCCATCA
CACTGGCGGCGCTCCGAGCATGCATTTAGAGG

16523.1.edit

AGCGTGGNCGCGGACGANACACAACACCCC

16523.2.edit

TCGAGCGGCCCGCCCGGCCAGGNCCACATCGGCAGGGTCCGAGCCCTGGCCGCCATACTCG
AACTGGAATCCATCGGTCAATGCTCTTGCCTGACAGACATGCCTCTTGTCTTGGGGTTCTT
GCTGATGNACCAGTTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACGCAGGTCTACCA
GTCTCCATGTTGCAGAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGTCAATCC
AGTACTCTCCACTCTTCCAGTCAGAGTGGCAGATCTTGAGGTCACGGCAGGTGCGGGCGGG
GTTCTTGACCT

16524.1.edit

AGCGTGGTCCGCGGCCGAGGTCCAGCCTCGAGATAANGGTGAAGGTGGTCCCCCGGACTT
CCAGGTATACCTGGACCTCGTGGTAGCCCTGGTGAGAGAGGTGAAACTGGCCCTCCAGGA
CCTGCTGGTTTCCCTGGTGCTCCTGGACAGAAATGGTGAACCTGGNGGTAAAGGAGAAAGA
GGGGCTCCGGNTGANAAAGGTGAACGAGGCCCTCCTGNATTGGCAGGGGCCCCANGACTT
AGAGGTGGAGCTGGCCCCCTGGCCCCGAAGGAGGAAAGGGTGCTGCTGGTCTCTCTGGG
CCACCTGG

FIG. 15ZZ

[illegible]

16526.1.edit

16526.2.edit

16527.1.edir

16527.2.edit

FIG. 15.44A

A

16528.1.edit

TCGAGCGGGCCCGCCGGCCAGGTCCACCACACCCAATTCCTTGCTGGTATCATGGCAGCCGC
CACGTGCCAGGATTACCGGCTACATCAAGTATGAGAAGCCTGGGTCTCTCCAGAGA
AGTGGTCCCTCGGCCCCCGCCTGGTGTACAGAGGCTACTATTACTGGCCTGGAACCGGGA
ACCGAATATACAATTTATGTCAATTGCCCTGAAG

16528.2.edit

AGCGTGNTCNCGGCCGAGGATGGGGAAGCTCGNCTGTCTTTTTCCTTCCAATCAGGGGCTN
NNTCTTCTGATTATTCTTCAGGGCAANGACATAAAATTGTATATTCGGNTCCCGGTTCCAGN
CCAGTAATAGTAGCCTCTGTGACACCAGGGCGGGGCGAGGGACCACTTCTCTGGGAGGA
GACCCAGGCTTCTCATACTTGATGATGAAGCCGTAATCCTGGCACGTGGGCGGCTGCCAT
GATACCACCAANGAATTGGGTGTGGTGGACCTGCCCGGGCGGGCGCTCGAAAANCCGAA
TTCNTGCAAGAATATCCATCACACTTGGGCGGGCCGNTCGAACCATGCATCNTAAAAGGG
CCCCAATTTCCCCCTATTAGGNGAAGCCNC.ATTAAACAAATTCCACTTGG

16529.1.edit

TCGAGCGGGCCCGCCGGCCAGGTCTCGCGGTCCGACTGGTGATGCTGGTCTGTGGTCCCC
CCGGCCCTCTCGACCTCTGGTCCCCCTGGTCTCCAGCGCTGGTTTCGACTTCAGCTTC
CTGCCCCAQCACCTCAAGAGAAAGGCTCACGATGGTGGCCGCTACTACCGGGCTGATGAT
GCCAATGTGGTTCGTGACCGTGACCTCGAGGTGGACACCACCTCAAGAGCCTTGAGCCA
GCAGAA7CGAAAACATTCCGAACCCAAGAAGGGCAAGCCCGCAAGAAACCCCGCCCCG
ACCTGGCCGNGAACCTCCAAGAANGTGCCACNTCTTGACTGGGAAAAAAGGGAAAANT
ACTTGAATTGGAC

16529.2.edit

AGCGTGGTCCGCGCCGAGGTCCACATCGGCAGGGTCCGAGCCCTGGCCGCCATACTCGAA
CTGGAATCCATCGGTCA7GCTCTCGCCGAACCAGACATGCCTCTTGTCCTTGGGGTTCTTGC
TGATGTACCAGTTCTTCTGGGCCACACTCGGCTGAGTGGGGTACACGCAGGTCTCACCAGT
CTCCATGTTCCAGAAAGACTTTCATGCCATCCAGGTTGCAGCCTTGGTTGGGGTCAATCCAG
TACTCTCCACTCTTCCAGTCAGAACTGGCACATCTTGAGGTACGGCAGGGTGGGGCGGG
GTTCTTGGCGGCTGCCCTTCTCGGCTCCCCGAATGTTCTNNGAACTTGCTGG

FIG. 15BBB

16530.1.edit

AGCGTGGTCGCGGCCGAGGTCCACTAGAGGTCTGTGTGCCATTGCCCAGGCAGAGTCTCTG
CGTTACAACTCCTAGGAGGGCTTGTGTGCGGAGGGCCTGCTATGGTGTGCTGCGGTTCA
TCATGGAGAGTGGGGCCAAAGGCTGCGAGGTGTGGTGTCTGGGAACTCCGAGGACAGA
GGGCTAAATCCATGAAGTTTGTGGATGCCCTGATGATCCACAGCGGAGACCCTGTAACTA
CTACGTTGACACTTGCTTGTGCGCCACGTGTTGCTCANACANGGGTGGGCTGGGCATCAAG
GNG

16530.2.edit

TCGAGCGGGCCCGCCGGGCAGGTCTGCCAAGGAGACCCTGTTATGCTGTGGGACTGGCTG
GGGCATGGCAGGCGGCTCTGGCTTCCCACCCTTCTGTTCTGAGATGGGGGTGGTGGGCAGT
ATCTCATCTTTGGGTTCACAAATGCTCAGTGGTCAGGCAGGGGCTTCTTAGGGCCAATCT
TACCAGTTGGGTCCCAGGCGCATGATCTTCACCTTGATGCCCAGCACACCCTGTCTGAG
CAACACGTGGCGCACAGCAAGTGTCAACGTAAGTAAGTTAACAGGGTCTCCGCTGTGGAT
CATCAGGCCATCCACAACTTCATGGATTTAACCCTCTGTCTCGGAG

16531.1.edit

TCGAGCGGGCCCGCCGGGCAGGTCTTCCAGAGGTCCAAGGTCCACTGTGGAGGTCCCAGG
AGTGCTGGTGGTGGGCACAGAGGTCCGATGGGTGAAACCAATTGACATAGAGACTGTTCTT
GTCCAGGGTGTAGGGGCCCCAGGCTCTTGATGCCATTGGCCAGTTGGCTCAGCTCCCAGTAC
AGCCGCTCTCTGTTGAGTCCAGGGCTTTGGGCTCAAGATGATGGATGCCAGATGGCATCCA
CTCCAGTGGCTGCTCCATCCTTCTCGGACCTGAGAGAGGTGAGTCTGCAGCCAGAGTACAG
AGGGCCAACACTGGTGTCTTTCAATA

16531.2.edit

AGCGTGGTCGCGGCCGAGGTCTCTACTCGGAGCTAAGCAAACCTGACCAATGACATTGAAG
AGCTGGGGCCCTACACCCTGGACAGGAACAGTCTCTATGTCAATGGTTTACCCATCAGAG
CTCTGTGNCCACCACCAGCACTCTCTGGGACCTCCACAGTGGATTTCAGAACCTCAGGGACT
CCATCCTCCCTCTCCAGCCCCACAAATATGGCTGCTGGCCCTCTCCTGGTACCATTACCCCT
CAACTTCACCATCACCAACCTGCAGTATGGGGAGGACATGGGTACCCCTGNCTCCAGGAA
GTTCAACACCACA

16532.1.edit

TCGAGCGGGCCCGCCGGACAGGTCTGGGCGGATAGCACCGGGCATAATTTGGAATGGATGA
GGTCTGGCACCCCTGACCAGTCCAGCGAGGACTTGGTCTTAGTTGAGCAATTTGGCTAGGAG
GATAGTATGCAGCACGGTCTGAGNCTGTGGGATAGCTGCCATGAAGTAACCTGAAGGAG
GTGCTGGCTGGTANGGTTGATTACAGGGTTGGGAACAGCTCGTACACTTGCCATTCTCTG
CATATACTGGTATGAGGTGACCCTGGCCCTCTTCTTTTG

FIG. 15CCC

000T80"0898960

07_16537.1.edit

AGCGTGGTCGCGGCCGAGGTCCACATCGGCAGGGTCGGAGCCCTGGCCGCCATACTCGAA
CTGGAATCCATCGGTCATGCTCTCGCCGAACCAGACATGCCTCTTGTCTTGGGGTTCTTGC
TGATGTACCAGTTCTTCTGGGCCACACTGGGCTGAGTGGGGTACACCGCAGGTCTCACCAG
TCTCCATGTTGCAGAAGACTTTGATGGCATCCAGGTTGCAGCCTTGGTTGGGGTCAATCCA
GTACTCTCCACTCTTCCAGTCAGAAGTGGGCACATCTTGAGGTCACCGGCAGGTGCCGGGC
CGGGGGTTCTTGGCGCTTGGCCTCTGGGCTCCGGATGTTCTCGATCTGCTTGGCTCAGGCTC
TTGAGGGTGGGTGTCCACCTCGAGGTCACGGTCACCGAAACCTGCCCCGGGCGGCCCGCTC
GA

08_16537.2.edit

TCGAGCGGTGCCCCGGGCAGGTTTCGTGACCGTGACCTCGAGGTGGACACCACCCTCAAG
AGCCTGAGCCAGCAGATCGAGAACATCCGGAGCCCAGAGGGCAGCCGCAAGAACCCCGC
CCGCACCTGCCGTGACCTCAAGATGTGCCACTCTGACTGGAAGAGTGGAGAGTACTGGAT
TGACCCCAACCAAGGCTGCAACCTGGATGCCATCAAAGTCTTCTGCAACATGGAGACTGGT
GAGACCTGCGTGTACCCCACTCAGCCCACTGTGGGCCCAGAAGAACTGGTACATCAGCA
AGGAACCCCAAGGACAAGAGGCATTGTCTTGGTTCCGGCGAGNAGCATGACCCGATGGATT
CCAGTTTCGAGTATTGGCGGCCAGGGCTTCCCGACCCTTGCCGATGTGGACCTCGGCCGCG
ACCACCGCT

FIG. 15EEE

000T80" T089E96D"

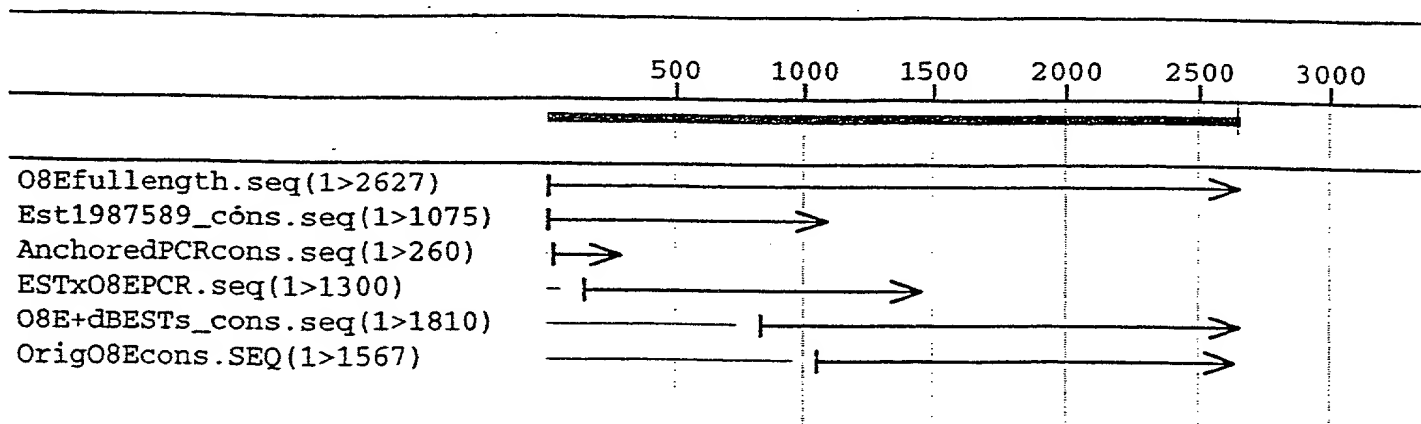


Fig. 16

AR

43

O8E Epitope Mapping

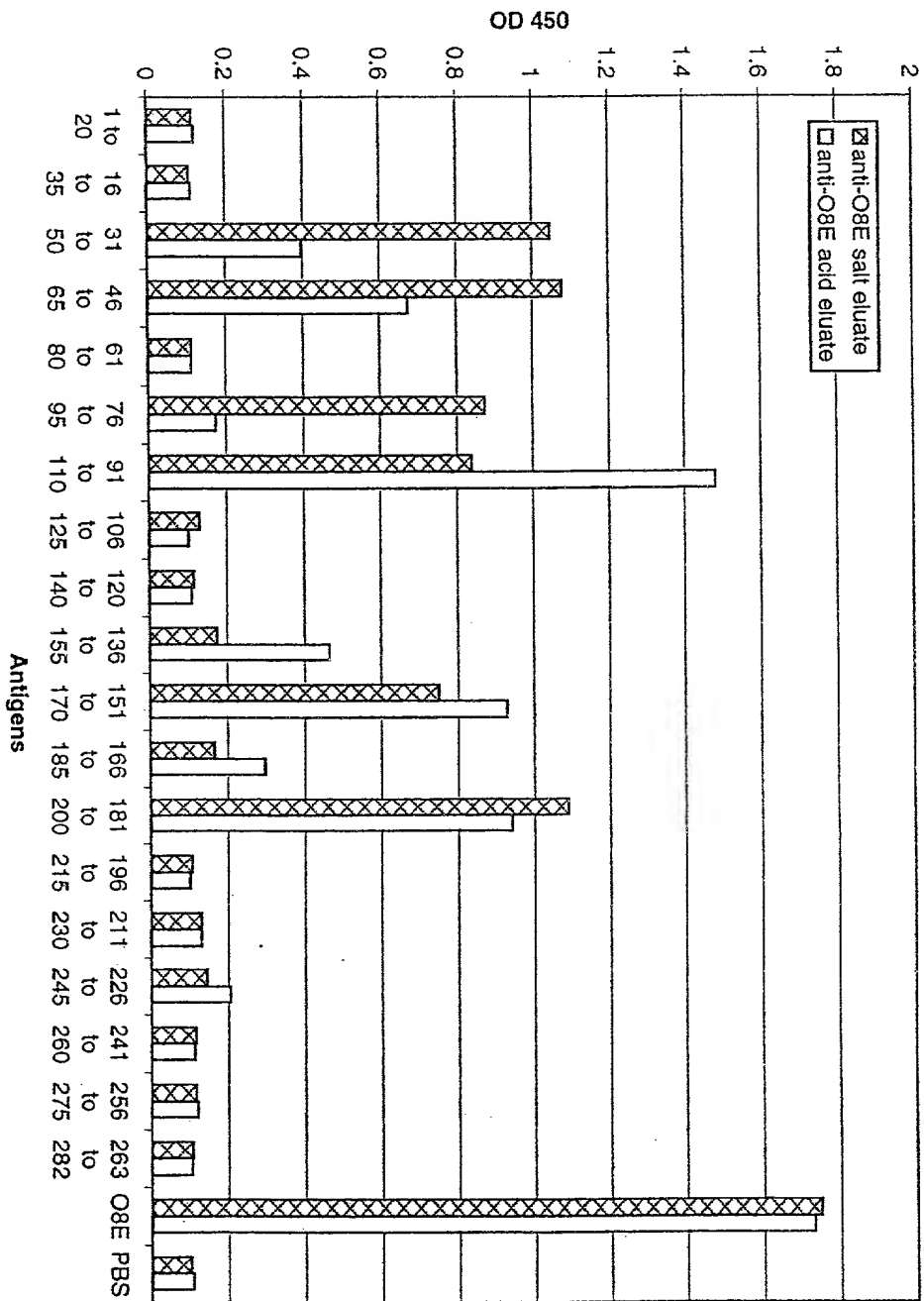
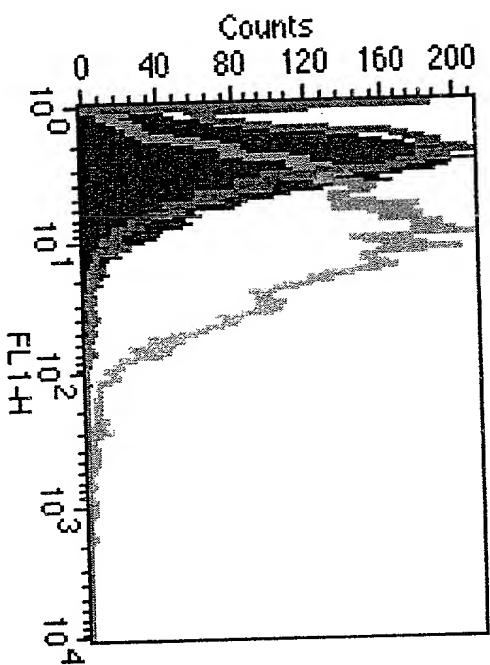


Fig. 17

09636301.081000

O8E Surface Expression

Fig. 18



- B305D/HEK stained with anti-O8E antibody
- O8E/HEK stained with anti-O8E antibody
- O8E/HEK stained with an irrelevant antibody

09535801.081000

Surface expression of O8E

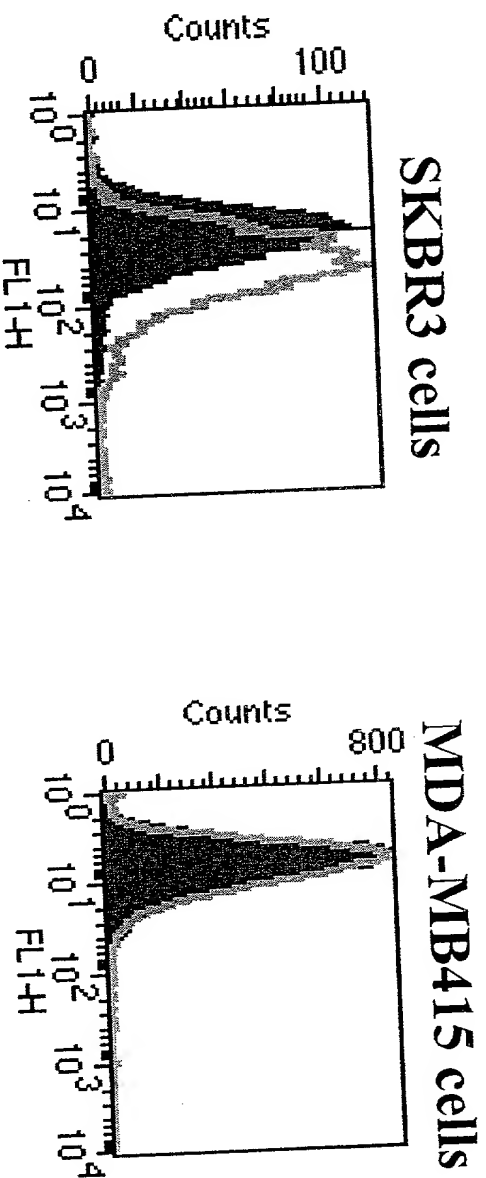
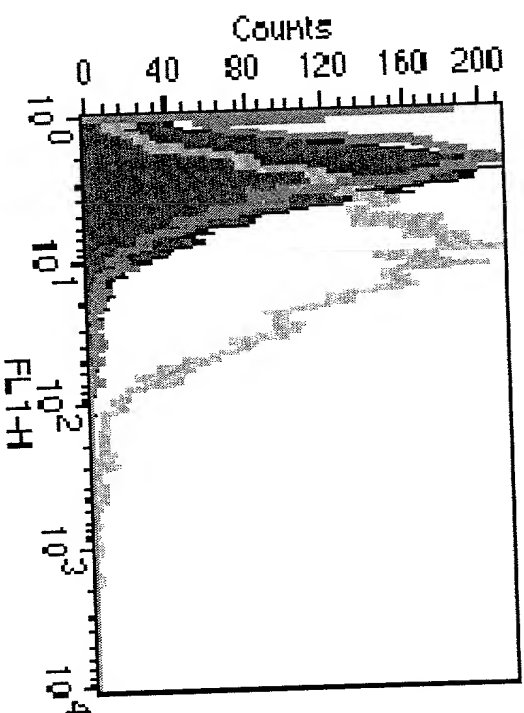


Fig. 19

Blue; irrelevant antibody
Green; anti-O8E antibody

09636801.081000

O8E Surface Expression

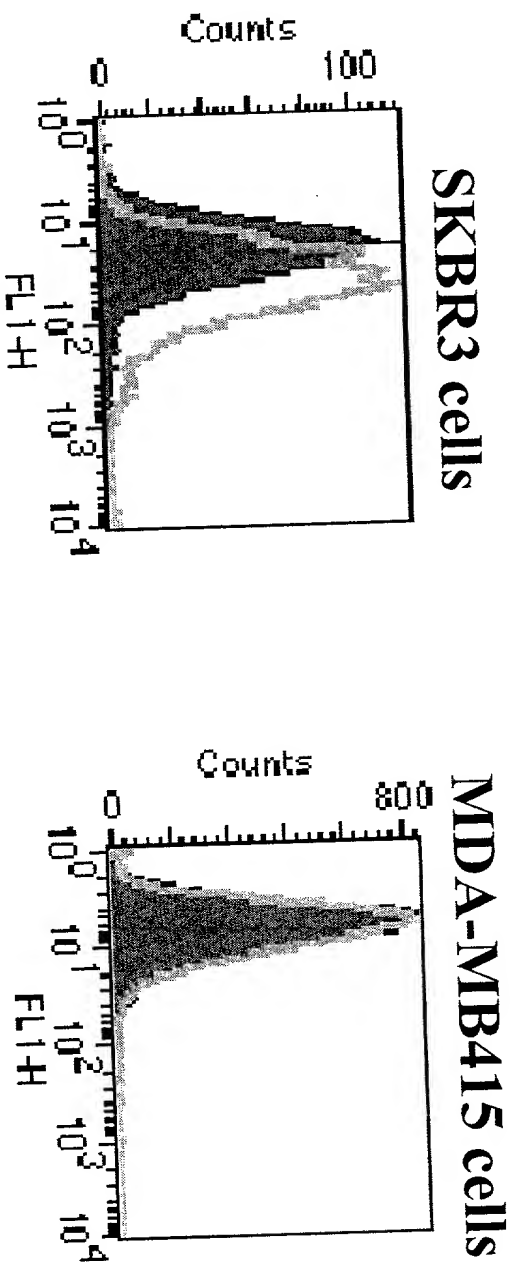


- B305D/HEK stained with anti-O8E antibody
- O8E/HEK stained with anti-O8E antibody
- O8E/HEK stained with an irrelevant antibody

FIGURE 20

09536801-081000

Surface expression of O8E



Blue; irrelevant antibody
Green; anti-O8E antibody

FIGURE 21


```

attgcttgcc tgagggtgac tacaaaattg cttgctaaaa ggtaggatg ggtaaagaat      240
tagattttct gaatgcaaaa ataaaatgtg aactaatgaa ctttaggtaa tacatattca      300
taaaataatt attcacatat ttcctgattt atcacagaaa taatgtatga aatgctttga      360
gtttcttgga gtaaaactcca ttactcatcc caagaaacca tattataagt atcactgata      420
ataagaacaa caggaccttg tcataaatte tggataagag aaatagtctc tgggtggttg      480
ntcttaattg ataaaattta cttgtccatc ttttagttca gaatcacaaa a              531

```

<210> 9

<211> 531

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(531)

<223> n = A,T,C or G

<400> 9

```

aagcggaaat gagaaaggag ggaaaatcat gtggtattga gcggaaaact gctggatgac      60
agggctcagt cctgttggag aactctgggt ggtgctgtag aacagggcca ctcacagtgg      120
ggtgcacaga ccagcacggc tctgtgacct gtttgttaca ggtccatgat gaggtaaaca      180
atacactgag tataagggtt ggtttagaaa ctcttacagc aatttgacaa agtaatcttc      240
tgtgcagtga atctaagaaa aaaattgggg ctgtatttgt atgttccttt ttttcatttc      300
atgtttctgag ttacctattt ttattgcatt ttacaaaagc atccttccat gaaggaccgg      360
aagttaaaaa caaagcaggt cctttatcac agcactgtcg tagaacacag ttcagagtta      420
tccaccaag gagccaggga gctgggctaa accaaagaat tttgcttttg gttaatcatc      480
aggtacttga gttggaattg ttttaatccc atcattacca ggctggangt g              531

```

<210> 10

<211> 861

<212> DNA

<213> Homo sapien

<400> 10

```

ccgcggctcc tgtccagacc ctgaccctcc ctcccaaggc tcaaccgtcc cccaacaacc      60
gccagccttg tactgatgtc ggtgcgaga gcctgtgctt aagtaagaat caggccttat      120
tgagacatt caagcaaagg ttggacaact acttttccag aacagaaagg aaactcatgc      180
atcagaaaag gtgactaata aaggtaccag aagaatatgg ctgcacaaat accagaatct      240
gatcagataa aacagtttaa ggaatttctg gggacctaca ataaacttac agagacctgc      300
tttttgact gtgttagaga cttcacaaca agagaagtaa aacctgaaga gaccacctgt      360
tcagaacatt gcttacagaa atatttaaaa atgacacaaa gaatatccat gagatttcag      420
gaatatcata ttcagcagaa tgaagccctg gcagccaaag caggactcct tggccaacca      480
cgatagagaa gtcctgatgg atgaactttt gatgaaagat tgccaacagc tgctttattg      540
gaaatgagga ctcatctgat agaatcccct gaaagcagta gccaccatgt tcaaccatct      600
gtcatgactg tttggcaaat ggaaaccgct ggagaaacaa aattgctatt taccaggaat      660
aatcacaata gaaggtctta ttgttcagt aaataataag atgcaacatt tgttgaggcc      720
ttatgattca gcagcttggt cacttgatta gaaaaataaa ccattgtttc ttcaattgtg      780
actgttaatt ttaaagcaac ttatgtgttc gatcatgtat gagatagaaa aatttttatt      840
actcaaagta aaataaatgg a              861

```

<210> 11

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(131)

<223> n = A,T,C or G

<400> 14

aagcaggcgg	ctccccgcgt	cgcagggccg	tgccacctgc	ccgccccccc	gctcgcctgc	60
tcgccccgcg	cgccgcgctg	ccgaccgcca	gcatgctgcc	gagagtgggc	tgccccgcgc	120
tgccgntgcc	g					131

<210> 15

<211> 692

<212> DNA

<213> Homo sapien

<400> 15

atctcttgta	tgccaaatat	ttaatatataa	tctttgaaac	aagttcagat	gaaataaaaa	60
tcaaagtttg	caaaaacgtg	aagattaact	taattgtcaa	atattcctca	ttgccccaaa	120
tcagtatttt	ttttatttct	atgcaaaagt	atgccttcaa	actgcttaaa	tgatatatga	180
tatgatacac	aaaccagttt	tcaaatagta	aagccagtca	tcttgcaatt	gtaagaaata	240
ggtaaaagat	tataagacac	cttacacaca	cacacacaca	cacacacgtg	tgacgcgcaa	300
tgacaaaaaa	caatttggcc	tctcctaaaa	taagaacatg	aagaccctta	attgctgcca	360
ggagggaaca	ctgtgtcacc	cctccctaca	atccaggtag	tttcctttaa	tccaatagca	420
aatctgggca	tatttgagag	gagtgattct	gacagccacg	ttgaaatcct	gtggggaacc	480
attcatgtcc	accactgggt	gccctgaaaa	aatgccaata	atTTTTcgct	cccacttctg	540
ctgctgtctc	ttccacatcc	tcacatagac	cccagaccgc	ctggccccctg	gctgggcatc	600
gcattgctgg	tagagcaagt	cataggtctc	gtctttgacg	tcacagaagc	gatacaccaa	660
attgcttggt	cggtcattgt	cataaccaga	ga			692

<210> 16

<211> 728

<212> DNA

<213> Homo sapien

<400> 16

cagacgggggt	ttcactatgt	tggttaggct	ggctctgaac	tcctgacttc	aggtgatctg	60
cctgccttgg	cctcccaaag	tgctgggatt	acaggcataa	gccactgcgc	ccggctgatc	120
tgatggtttc	ataaggcttt	tccccctttt	gtcagcact	tctccttcct	gccgccatgt	180
gaagaaggac	atgtttgctt	ccccctccac	cacgattgta	agttgtttcc	tgaggcctcc	240
ccggccatgc	tgaactgtga	gtcaattaaa	cctctttcct	ttataaatta	tccagttttg	300
ggtagtcttt	tattagtaga	atgagaacag	actaatataa	cccttaaagg	agactgacgg	360
agaggattct	tcttgatcc	cagcacttcc	tctgaatgct	actgacattc	ttcttgagga	420
ctttaaactg	ggagatagaa	aacagattcc	atggctcagc	agcctgagag	cagggaggga	480
gccaagctat	agatgacatg	ggcagcctcc	cctgaggcca	ggtgtggccg	aacctgggca	540
gtgctgccac	ccacccccacc	agggccaagt	cctgtccttg	gagagccaag	cctcaatcac	600
tgctagcctc	aagtgtcccc	aagccacagt	ggctaggggg	actcagggaa	cagttcccag	660
tctgccttac	ttctcttacc	tttacccttc	atacctccaa	agtagaccat	gttcatgagg	720
tccaaagg						728

<210> 19
 <211> 1043
 <212> DNA
 <213> Homo sapien

<400> 19

ctctgtggaa	aactgatgag	gaatgaattt	accattaccc	atgtttctcat	ccccaagcaa	60
agtgtctgggt	ctgattactg	caacacagag	aacgaagaag	aacttttcct	catacaggat	120
cagcagggcc	tcatcacact	gggctggatt	catactcacc	ccacacagac	cgcgtttctc	180
tccagtgtcg	acctacacac	tactgtctct	taccagatga	tgttgccaga	gtcagtagcc	240
attgtttgct	cccccaagtt	ccaggaaact	ggattcttta	aactaactga	ccatggacta	300
gaggagattt	cttcctgtcg	ccagaaagga	tttcatccac	acagcaagga	tccacctctg	360
ttctgtagct	gcagccacgt	gactgttggt	gacagagcag	tgaccatcac	agaccttcga	420
tgagcgtttg	agtcacaacac	cttccaagaa	caacaaaacc	atatcagtgt	actgtagccc	480
cttaatttaa	gctttctaga	aagctttgga	agtttttgta	gatagtagaa	agggggggcat	540
cacctgagaa	agagctgatt	ttgtatttca	ggtttgaaaa	gaaataactg	aacataatttt	600
ttaggcaagt	cagaaagaga	acatgggtcac	ccaaaagcaa	ctgtaactca	gaaattaagt	660
tactcagaaa	ttaagtagct	cagaaattaa	gaaagaatgg	tataatgaac	ccccatatac	720
ccttccttct	ggattcacca	attgttaaca	tttttttcct	ctcagctatc	cttctaattt	780
ctctctaatt	tcaatttggt	tatatattacc	tctgggctca	ataagggcat	ctgtgcagaa	840
atttggaagc	catttagaaa	atcttttgga	ttttcctgtg	gtttatggca	atatgaatgg	900
agcttattac	tgggggtgagg	gacagcttac	tccatttgac	cagattgttt	ggctaacaca	960
tcccgaagaa	tgattttgtc	aggaattatt	gttatttaat	aaatatttca	ggatattttt	1020
cctctacaat	aaagtaacaa	tta				1043

<210> 20
 <211> 448
 <212> DNA
 <213> Homo sapien

<400> 20

ggacgacaag	gccatggcga	tatcggatcc	gaattcaagc	ctttggaatt	aaataaacct	60
ggaacagggg	aggtgaaagt	tggagtgaga	tgctttccat	atctatacct	ttgtgcacag	120
ttgaatggga	actgtttggg	tttagggcat	cttagagttg	attgatggaa	aaagcagaca	180
ggaactgggt	ggaggtcaag	tggggaagtt	ggtgaatgtg	gaataactta	cctttgtgct	240
ccacttaaac	cagatgtggt	gcagctttcc	tgacatgcaa	ggatctactt	taattccaca	300
ctctcattaa	taaattgaat	aaaaggggaat	gttttggcac	ctgatataat	ctgccaggct	360
atgtgacagt	aggaaggaat	ggtttcccct	aacaagccca	atgcactggg	ctgactttat	420
aaattatttta	ataaaatgaa	ctattatc				448

<210> 21
 <211> 411
 <212> DNA
 <213> Homo sapien

<400> 21

ggcagtgaca	ttcaccatca	tgggaaccac	cttccttttt	cttcaggatt	ctctgtagtg	60
gaagagagca	cccagtgttg	ggctgaaaac	atctgaaagt	agggagaaga	acctaaaata	120
atcagtatct	cagagggctc	taagtgcca	agaagtctca	ctggacattt	aagtgccaac	180
aaaggcatac	tttcggaatc	gccaagtcaa	aactttctaa	cttctgtctc	tctcagagac	240
aagtgaagct	caagagtcta	ctgctttagt	ggcaactaca	gaaaactggg	gttaccacaga	300

<220>
 <221> misc_feature
 <222> (1)...(461)
 <223> n = A,T,C or G

<400> 27
 gaaatgtata tttaatcatt ctcttgaacg atcagaactc traaatcagt tttctataac 60
 arcatgtaat acagtcaccg tggctccaag gtccaggaag gcagtgggta acacatgaag 120
 agtgtgggaa gggggctgga aacaaagtat tcttttcctt caaagcttca ttcctcaagg 180
 cctcaattca agcagtcatt gtccttgctt tcaaaaagtct gtgtgtgctt catggaagg 240
 atatgtttgt tgccttaatt tgaattgtgg ccaggaaggg tctggagatc taaattcaga 300
 gtaagaaaac ctgagctaga actcaggcat ttctcttaca gaacttggct tgcagggtag 360
 aatgaangga aagaaactta gaagctcaac aagctgaaga taatcccatc aggcatttcc 420
 cataggcctt gcaactctgt tcaactgagag atgttatcct g 461

<210> 28
 <211> 541
 <212> DNA
 <213> Homo sapien

<400> 28
 agtctggagt gagcaacaa gagcaagaaa caarragaag ccaaaagcag aaggctccaa 60
 tatgaacaag ataaatctat cttcaaagac atattagaag ttgggaaaat aattcatgtg 120
 aactagacaa gtgtgttaag agtgataagt aaaatgcacg tggagacaag tgcattccca 180
 gatctcaggg acctccccct gcctgtcacc tggggagtga gaggacagga tagtgcattg 240
 tctttgtctc tgaattttta gttatatgtg ctgtaatgtt gctctgagga agccccctgga 300
 aagtctatcc caacatatcc acatcttata ttccacaaat taagctgtag tatgtaccct 360
 aagacgctgc taattgactg ccacttcgca actcaggggc ggctgcattt tagtaatggg 420
 tcaaattgatt cactttttat gatgcttccc aagggtgcctt ggcttctctt cccaactgac 480
 aaatgcccaa gttgagaaaa atgatcataa ttttagcata aaccgagcaa tcggcgaccc 540
 c 541

<210> 29
 <211> 411
 <212> DNA
 <213> Homo sapien

<400> 29
 tagctgtctt cctcactctt atggcaatga ccccatatct taatggatta agataatgaa 60
 agtgtatttc ttacactctg tatctatcac cagaagctga ggtgatagcc cgcttgatcat 120
 tgtcatccat attctgggac tcaggcggga actttctgga atattgccag ggagcatggc 180
 agaggggcac agtgcattct gggggaatgc acattggctc agcctgggta atgagtata 240
 tacattacct ctgttcacaa ctcatgccc agcaccagtc acaaggcccc accaaatacc 300
 agagcccaag aaatgtagtc ctgttgatat ggttttgctg tgtcccaacc caaatctcat 360
 cttgaattgt aagctcccat aattcccatg tgttggtgga gggacctggt g 411

<210> 30
 <211> 511
 <212> DNA
 <213> Homo sapien

<400> 30

atcatgagga	tgttaccaa	gggatggtac	taaaccattt	gtattcgtct	gttttcacac	60
tgctttgaag	atactacctg	agactgggta	at ttataaac	aaaagagatt	taattgactc	120
acagttctgc	atggctgaag	aggcctcagg	aaacttacag	tcattggtgga	aggcaaagga	180
ggagcaaggc	atgtcttaca	tgtcagtagg	agagagagcg	agagcaggag	aacctgccac	240
ttataaacca	ttcagatctc	ataactccct	atcatgagaa	aaacatggag	gaaaccaccc	300
tcattgatcca	atcacctccc	gccagggtccc	tcctctcgaca	cgtgggggatt	ataattcagg	360
attagaggga	cacagagaca	aaccatatca	tcattcatga	gaaatccacc	ctcatagtcc	420
aatcagctcc	taccaggccc	cacctccaac	actgggggatt	gcaattcaac	atgagatttg	480
gatggggaca	cagattcaaa	ccatatcata	c			511

<210> 31

<211> 827

<212> DNA

<213> Homo sapien

<400> 31

catggccttt	ctccttagag	gccagagggtg	ctgccctggc	tgggagtga	gctccaggca	60
ctaccagctt	tcctgatttt	cccgttttgt	ccatgtgaag	agctaccacg	agccccagcc	120
tcacagtgtc	cactcaaggg	cagcttggtc	ctcttgctct	gcagaggcag	gctgggtgtga	180
ccctgggaac	ttgacctggg	aacaacaggt	ggcccagagt	gagtgtggcc	tggccctca	240
acctagtgtc	cgctctctc	tctcctggag	ccagtcttga	gtttaaaggc	attaagtgtt	300
agatacaagc	tccttggtgc	tggaaaaaca	cccctctgct	gataaagctc	agggggcact	360
gaggaagcag	aggccccttg	ggggtgccct	cctgaagaga	gcgtcaggcc	atcagctctg	420
tcctctgtgt	gctcccacgt	ctgttctctc	ccctccatct	ctgggagcag	ctgcacctga	480
ctggccacgc	gggggcagtg	gaggcacagg	ctcagggtgg	ccgggctacc	tggcacctta	540
tggcttacaa	agtagagttg	gccagtttct	cttccacctg	aggggagcac	tctgactcct	600
aacagtcttc	cttgccctgc	catcatctgg	ggtggctggc	tgtcaagaaa	ggccgggcat	660
gctttctaaa	cacagccaca	ggaggcttgt	agggcatctt	ccagggtggg	aaacagtctt	720
agataagtaa	ggtgacttgc	ctaaggcttc	ccagcaccct	tgatcttggg	gtctcacagc	780
agactgcatg	tsaacaactg	gaaccgaaaa	catgcctcag	tataaaa		827

<210> 32

<211> 291

<212> DNA

<213> Homo sapien

<400> 32

ccagaacctc	cttctctttg	gagaatgggg	aggcctcttg	gagacacaga	gggtttcacc	60
ttggatgacc	tctagagaaa	ttgcccaaga	agcccacctt	ctgggtccaa	cctgcagacc	120
ccacagcagt	cagttgggtc	ggcctgctg	tagaagggtc	cttgggtcca	ttgcctgctt	180
ccaaccaatg	ggcaggagag	aaggccttta	tttctcgccc	acctattctc	ctgtaccagc	240
acctccgttt	tcagtcagy	ttgtccagca	acgggtaccgt	ttacacagtc	a	291

<210> 33

<211> 491

<212> DNA

<213> Homo sapien

<400> 33

tgcatgtagt	tttatttatg	tgttttsgtc	tggaaaacca	agtgtcccag	cagcatgact	60
------------	------------	------------	------------	------------	------------	----


```

ggcggttagg catggaactg agaagaacga agaagctttc agactacgtg gggaagaatg      60
aaaaaaccaa aattatcgcc aagattcagc aaaggggaca gggagctcca gcccagagagc      120
ctattattag cagtgaggag cagaagcagc tgatgctgta ctatcacaga agacaagagg      180
agctcaagag attggaagaa aatgatgatg atgcctatct aaactcacca tgggcgggata      240
acactgcttt gaaaagacat tttcatggag tgaaagacat aaagtggaga ccaagatgaa      300
gttcaccagc tgatgacact tccaaagaga ttagctcacc t                                341

```

```

<210> 37
<211> 521
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(521)
<223> n = A,T,C or G

```

```

<400> 37
tctgaagggtt aaatgtttca tctaaatagg gataatgrta aacacctata gcatagagtt      60
gtttgagatt aaatgagata atacatgtaa aattatgtgc ctggcataca gcaagattgt      120
tggtgtgtgt gatgatgatg atgatgatga taatattttt ctatccccag tgcacaactg      180
cttgaacctt ttagataatc aatacatgtt tcttgaactg agatcaattt ccccatgttg      240
tctgactgat gaagccctac attttcttct agaggagatg acatttgagc aagatcttaa      300
agaaaatcag atgccttcac ctgaccactg cttggtgatc ccatggcact ttgtacatct      360
ctccattagc tctcatctca ccagcccatc attattgtat gtgctgcctt ctgaagcttg      420
cagctggcta ccatcmggta gaataaaaat catcctttca taaaatagtg accctccttt      480
tttatttgca tttcccaaag ccaagcaccg tggganggta g                                521

```

```

<210> 38
<211> 461
<212> DNA
<213> Homo sapien

```

```

<400> 38
tatgaagaag ggaaaagaag ataatttgtg aaagaaatgg gtccagttac tagtctttga      60
aaagggtcag tctgtagctc ttcttaatga gaataggcag ctttcagttg ctccagggta      120
gatttcctta gtggtgtatc taatcacagg aaacatctgt ggttccctcc agtctctttc      180
tgggggactt gggcccaact ctcatctcat ttaattagag gaaatagaac tcaaagtaca      240
atttactgtt gtttaacaat gccacaaaga catggttggg agctatttct tgatttgtgt      300
aaaatgctgt ttttgtgtgc tcataatggg tccaaaaatt ggggtgctggc caaagagaga      360
tactgttaca gaagccagca agaagacctc tgttcattca cccccccggg gatatcagga      420
attgactcca gtgtgtgcaa atccagtttg gcctatcttc t                                461

```

```

<210> 39
<211> 769
<212> DNA
<213> Homo sapien

```

```

<400> 39
tgagggactg attggtttgc tctctgctat tcaattcccc aagcccactt gttcctgcag      60
cgtcctcctt ctcatctcct ttagttgtac cctctctttc atctgagacc tttccttctt      120

```


<210> 43
 <211> 451
 <212> DNA
 <213> Homo sapien

<400> 43
 catgcgtttc accactgttg gccaggtctg tctcgaactc ctggcctcaa gcaatccacc 60
 cgcctcagcc tccaaaagtg ctgggattac agatgtgagc catggcacca tgccaaaagg 120
 ctatattcct ggctctgtgt ttccgagact gcttttaatc ccaacttctc tacatttaga 180
 ttaaaaaata ttttattcat ggtcaatctg gaacataatt actgcatctt aagtttccac 240
 tgatgtatat agaaggctaa aggcacaatt tttatcaaatt ctagtagagt aaccaaacad 300
 aaaatcatta attactttca acttaataac taattgacat tcctcaaaag agctgttttc 360
 aatcctgata gggtctttat tttttcaaaa tatatttgcc atgggatgct aatttgcaat 420
 aaggcgcata atgagaatac cccaaactgg a 451

<210> 44
 <211> 521
 <212> DNA
 <213> Homo sapien

<400> 44
 gttggacccc cagggactgg aaagacactt cttgcccag ctgtggcggg agaagctgat 60
 gttccttttt attatgcttc tggatccgaa tttgatgaga tgtttgtggg tgtgggagcc 120
 agccgtatca gaaatctttt tagggaagca aaggcgaatg ctcttctgtg tatatttatt 180
 gatgaattag attctgttgg tgggaagaga attgaatctc caatgcattc atattcaagg 240
 cagaccataa atcaacttct tgctgaaatg gatggtttta aaccatga aggagttatc 300
 ataataggag ccacaaactt cccagaggca ttagataatg ccttaatacc gtcctggctg 360
 ttttgacatg caagttacag ttccaaggcc agatgtaaaa ggtcgacag aaattttgaa 420
 atggtatctc aataaaataa agtttgatca atccgttgga tccagaaatt atagcctcga 480
 ggtactggtg gcttttccgg aagcagagtt gggagaatct t 521

<210> 45
 <211> 585
 <212> DNA
 <213> Homo sapien

<400> 45
 gcctacaaca tccagaaaga gtctaccctg cacctggtgc tscgtctcag aggtgggatg 60
 cagatcttcg tgaagaccct gactggtaag accatcactc tcgaagtgga gccgagtgc 120
 accatygaga acgtcaaagc aaagatccar gacaaggaag gcrtycctcc tgaccagcag 180
 aggttgatct ttgccggaaa gcagctggaa gatggdcgca cctgtctga ctacaacatc 240
 cagaaagagt cyaccctgca cctggtgctc cgtctcagag gtgggatgca ratcttcgtg 300
 aagaccctga ctggtaagac catcaccctc gaggtggagc ccagtgcac catcgagaat 360
 gtcaaggcaa agatccaaga taaggaaggc atccctcctg atcagcagag gttgatcttt 420
 gctgggaaac agctggaaga tggacgcacc ctgtctgact acaacatcca gaaagagtcc 480
 actctgcact tggctctgct cttgaggggg ggtgtctaag tttccctttt taagggttcm 540
 acaaatttca ttgcactttc ctttcaataa agttgttgca ttccc 585

<210> 46
 <211> 481

<212> DNA

<213> Homo sapien

<400> 46

```

gaactggggcc ctgagcccaa gtcattgcctt gtgtccgcat ctgccgtgtc acctctgtkc      60
ctgccccctca cccctccctc ctggtcttct gagccagcac catctccaaa tagcctattc      120
cttcctgcaa atcacacaca catgcgggcc acacatacct gctgccctgg agatggggaa      180
gtaggagaga tgaatagagg cccatacatt gtacagaagg aggggcaggt gcagataaaa      240
gcagcagacc cagcggcagc tgaggtgcat ggagcacggt tggggccggc attgggctga      300
gcacctgatg ggctcatct cgtgaatcct cgaggcagcg ccacagcaga ggagttaagt      360
ggcacctggg ccgagcagag caggagactg agggtcagag tggaggctaa gctgccctgg      420
aactcctcaa tcttgctgc cccctagtat gaagccccct tctgccccct acaattcctg      480
a                                                                481

```

<210> 47

<211> 461

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(461)

<223> n = A,T,C or G

<400> 47

```

atggatctta ctttgccacc cagggttgag tgcagtgtct caatcttggc tcaactgcagc      60
cttaacctcc caggctcaag ctatcctcct gccaaagcct tccacatagc tgggactaca      120
ggtacacngc caccacaccc agctaaaatt tttgtatctt ttgtagagac gggatctctgc      180
cacgttgccc aggtctgtcc catcctgacc tcaagcagat ctgccacact cagcccccca      240
acgtgctagg attacaggcg tgagccaccg caccacagct ttgttttgct tttaatggaa      300
tcaccagttc cctccgtgt ctcagcagca gctgtgagaa atgctttgca tctgtgacct      360
ttatgaaggg gaacttccat gctgaatgag ggtaggatta catgtcctctg tttcccgagg      420
gtcaagaaag cctcagactc cagcatgata agcagggtga g                                                                461

```

<210> 48

<211> 571

<212> DNA

<213> Homo sapien

<400> 48

```

ataggggctt taaggaggga attcagggtc aatgagggtc taaggccagg gctcttatcc      60
agtaagactg gggtccttag atgagaaaga gacaccogag gtccttctct ctgccgtgtg      120
aggatgcatc aagaaggcgg ccgtctgcaa gcgaaggaga ggccgcacca gaaaccgaca      180
ccttcattct ggacttgag cctctagaac tgagaaaata actgtctgtt ggttaagcca      240
cccagtttgt agtattctct tatggcttcc taagcagact aacaaacaaa caccacaaat      300
taactgatgg cttcgctgtc ttctgtaaaa attgctatga gagaactttt cactcactgt      360
tttgagttt ctcctcagt ccttggttct ttcttctcac ataateccaa tttcaattta      420
tagttcatgg ccaggcaga gtcattcatt acggcatctc ctgagctaaa ccagcacctg      480
ctctgtcac ttcttgactg gctgtctcatt atcagccctc ttgcagagat ttcatttctc      540
cccgtgccag gtacttcacg caccaagctc a                                                                571

```

<210> 49
 <211> 511
 <212> DNA
 <213> Homo sapien

<400> 49
 ggataatgaa gttgttttat ttagcttgga caaaaaggca tttcctcta ttttcttata 60
 caacaaatat ccccaaaata aagcaagcat atatatcttg aatgtgtaat aatccagtga 120
 taaacaagag cagtacttta aaagaaaaaa aaatatgtat ttctgtcagg ttaaaatgag 180
 aatcaaaacc atttactctg ctaactcatt attttttgc ttttttttgg ttaagagagg 240
 caatgcaata cactgaaaaa ggtttttatc ttatctggca ttggaattag acatattcaa 300
 accccagccc ccattttcaa actttaagac cacaacaag taatttactt ttctgaacat 360
 tgggtttttc tggaaaatgg gaattataaa atagactttg cagactctta tgagattaaa 420
 taagataatg tatgaaattc tttcttcttt tttacttctt tttccttttt gagatggagt 480
 ctcaccccg t caccaggtt ggagtacagt g 511

<210> 50
 <211> 561
 <212> DNA
 <213> Homo sapien

<400> 50
 ccactgcact ccagcctggg tgacggagtg agactctgtc tcaaaaaaac aaacaaacaa 60
 acaaacaaaa aactgaaaag gaaatagagt tctcttttcc tcatatatga atatattatt 120
 tcaacagatt gttgatcacc taccatatgc ttggtattgt tctaattgct ggggatacag 180
 caagagggttc tgcagaactt catggagcat gaaagtaaat aaacaaagtt aatttcaagg 240
 ccaggcatgg ttgctcacac ctttagtccc agcactttgg gaggctgagg cagggtggatc 300
 acttggggccc aggagttcaa ggctgcagtg agccaagatt gtgccactac tctccaggct 360
 gggcaacaga gcaagaccct gtctcagggg gaacaaaaag ttaatttcag attttgttaa 420
 gtgctgtaaa ggaagtaaat aggttgatat tcaagagagc acctgaaggc caggcgtggg 480
 ggctcacgcc tgtgggtctaa cgctttggga agcccagagc ggcggatcac aaggtcagga 540
 gaattttggc caggcatggt g 561

<210> 51
 <211> 451
 <212> DNA
 <213> Homo sapien

<400> 51
 agaatccatt tattgggttt taaactagtt acacaactga aatcagtttg gcactacttt 60
 atacagggat tacgcctgtg tatgccgaca cttaaatact gtaccaggac cactgctgtg 120
 cttaggtctg tattcagtca ttcagcatgt agatactaaa aatatactgt agtgttcctt 180
 taaggaagac tgtacagggt gtgttgcaag atgacattca ccaatttggt aattatttca 240
 acccagaaga tacctttcac tctataaact tgtcataggc aaacatgtgg tgttagcatt 300
 gagagatgca cacaaaaatg ttacataaaa gtccagacat tctaatagata agtgaactga 360
 aaaaaaaaaa aaccccatat ctcaattttt gtaacaagat aaagaaaata atttaaaaac 420
 acaaaaaatg gcattcagtg ggtacaaagc c 451

<210> 52
 <211> 682
 <212> DNA

<213> Homo sapien

<400> 52

```

caaatatttta atataaatct ttgaaacaag ttcagakgaa ataaaaatca aagtttgcaa      60
aaacgtgaag attaacttaa ttgtcaaata ttcctcattg ccccaaata gtatTTTTTTT      120
tatttctatg caaaagtatg ccttcaaact gcttaaata tatatgatat gatacacaaa      180
ccagttttca aatagtaaag ccagtcattc tgcaattgta agaaatagggt aaaagattat      240
aagacacctt acacacacac acacacacac acacacacgt gtgcaccgcc aatgacaaaa      300
aacaatttgg cctctcctaa aataagaaca tgaagaccct taattgctgc caggagggaa      360
cactgtgtca cccctcccta caatccaggt agtttccttt aatccaatag caaatctggg      420
catatttgag aggagtgatt ctgacagcca csgttgaaat cctgtgggga accattcatg      480
tccaccactt ggtgccctga aaaaatgccata ataatttttc gctcccaact ctgctgctgt      540
ctcttcacata tcctcacata gacccagac ccgctggccc ctggtggggc atcgcatgtg      600
tggtagagca agtcataagg ctctcttttg acgtcacaga agcgatacac caaattgcct      660
ggtcgggtcat tgtcataacc ag                                         682

```

<210> 53

<211> 311

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(311)

<223> n = A,T,C or G

<400> 53

```

tttgacttta gtaggggtct gaactatttta ttttactttg ccmgtaatat ttaraccyta      60
tatatctttc attatgccat cttatcttct aatgbcaagg gaacagwtgc taamctggct      120
tctgcattwa tcacattaaa aatggctttc ttggaaaatc ttcttgatat gaataaagga      180
tcttttavag ccatcattta aagcmggnnt ctctccaaca cgagtctgct sasggggggk      240
gagctgtgaa ctctggctga aggctttccc atacacactg caatgacmtg gtttctgacc      300
agbgtgagtt a                                         311

```

<210> 54

<211> 561

<212> DNA

<213> Homo sapien

<400> 54

```

agagaagccc cataaatgca atcagtgtgg gaaggccttc agtcagagct caagcctttt      60
cctccatcat cgggttcata ctggagagaa accctatgta tgtaatgaat gcggcagagc      120
ctttggtttt aactctcatc ttactgaaca cgtaaggatt cacacaggag aaaaacccta      180
tgtttgtaat gagtgcggca aagcctttcg tcggagtcc actcttgttc agcatcgaag      240
agttcacact ggggagaagc cctaccagtg cgttgaaatgt gggaaagctt tcagccagag      300
ctcccagctc accctacatc agccgagttc aactggaga gaagccctat gactgtggtg      360
actgtgggaa ggccttcagc cggaggtcaa cctcattca gcatcagaaa gttcacagcg      420
gagagactcg taagtgcaga aaacatggtc cagcctttgt tcatggctcc agcctcacag      480
cagatggaca gattccact ggagagaagc acggcagaac ctttaaccat ggtgcaaatc      540
tcattctgcg ctggacagtt c                                         561

```

<210> 55
 <211> 811
 <212> DNA
 <213> Homo sapien

<400> 55
 gagacagggg ctcactttgt caccagggct ggaatgcagt ggtgcatct tacgtagctc 60
 actgcagccc tgacctcctg gactcaaaca attctcctgc ctcagccctg caagtagctg 120
 ggactgtggg tgcacatgct catgctggc taacttttgt agtttttgta aagatggggg 180
 tttgccatgt tgcacatgct ggtcttgaac tctgagctc aaacgatctg cccacctcgg 240
 cctcccagaa tgttgggatt acaggggtaa accaccacgc ctggcccat tagggattc 300
 ttagcatcca cttgtctact gagattaatc ataagagatg ataagcactg gaagaaaaaa 360
 atttttacta ggctttggat atttttttcc tttttcagct ttatacagag gattggatct 420
 ttagttttcc tttaactgat aataaaacat tgaaaggaaa taagtttacc tgagattcac 480
 agagataacc ggcactcact ccttgcctca ttccagtctt taccacatca attattttca 540
 gaggtgcagg ataaaggcct ttagtctgct ttccgacttt ttcttccact tttttgtaaa 600
 cctgttgcct gacaaatgga attgacagcg tatgccatga ctattccatt tgtcaggcat 660
 acgctgtcaa tttttccacc aatcccttgt ctctctttgg agagatcttc ttatcagcta 720
 gtcctttggc aaaagtaatt gcaacttctt ctagggtattc tattgtccgt tccactgggtg 780
 gaaccctcgg gaccaggact aaaacctcca g 811

<210> 56
 <211> 591
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(591)
 <223> n = A,T,C or G

<400> 56
 atctcatata tatattttct cctgacttta tttgcttgc tctgnacgc atttaaaata 60
 tcacagagac caaaatagag cggctttctg gtggaacgca tggcagtcac aggacaaaat 120
 aaaaaactag ggggctctgt cttctcatac atcatacaat tttcaagtat tttttttatg 180
 tacaaagagc tactctatct gaaaaaaaat taaaaaataa atgagacaag atagttttatg 240
 catcctagga agaaagaatg ggaagaaaga acggggcagt tgggtacaga ttctgtccc 300
 ctgttcccag ggaccactac cttcctgcca ctgagttccc ccacagcctc acccatcatg 360
 tcacagggca agtgccagg taggtgggga ccagtggaga caggaaccag caacatactt 420
 tggcctggaa gataaggaga aagtctcaga aacacactgg tgggaagcaa tcccacnggc 480
 cgtgccccan gagcttccca cctgctgctg gctccctggg tggctttggg aacagcttgg 540
 gcaggccctt ttgggtgggg nccaactggg cctttggggc cgtgtggaaa g 591

<210> 57
 <211> 481
 <212> DNA
 <213> Homo sapien

<400> 57
 aaacattgag atggaatgat agggtttccc agaatcagg ccatatttta actaaatgaa 60
 aattatgatt tatagccttc tcaaatacct gccatacttg atatctcaac cagagcta 120

tttacctctt	tacaaattaa	ataagcaagt	aactggatcc	acaatttata	atacctgtca	180
atTTTTtctg	tattaaacct	ctatcatagt	ttaagcctat	tagggtaactt	aatccttaca	240
aataaacagg	tttaaaatca	cctcaatagg	caactgccct	tctggttttc	ttctttgact	300
aaacaatctg	aatgcttaag	atTTTccact	ttgggtgcta	gcagtacaca	gtgttacact	360
ctgtattcca	gacttcttaa	attatagaaa	aaggaatgta	cactttttgt	attctttctg	420
agcagggccg	ggaggcaaca	tcctctacca	tggtagggac	ttgtatgcat	ggactacttt	480
a						481

<210> 58

<211> 141

<212> DNA

<213> Homo sapien

<400> 58

actctgtcgc	ccaggctgga	gcccabtggm	gcatctcga	ctccctgcaa	gctmcgcctc	60
acaggtcat	gccattctcc	tgcctcagca	tctggagtag	ctgggactac	aggcgccagc	120
caccatgcc	agctaatttt	t				141

<210> 59

<211> 191

<212> DNA

<213> Homo sapien

<400> 59

accttaaaga	cataggagaa	tttatactgg	gagagaaagc	ttacaaatgt	aaggtttctg	60
acaagacttg	ggagtgattc	acacctggaa	caacatactg	gacttcacac	tggabagaaa	120
ccttacaagt	gtaatgagt	tggcaaagcc	tttggcaagc	agtcaacact	tattcaccat	180
caggcaattc	a					191

<210> 60

<211> 480

<212> DNA

<213> Homo sapien

<400> 60

agtcaggatc	atgatggctc	agtttccac	agcgatgaat	ggagggccaa	atatgtgggc	60
tattacatct	gaagaacgta	ctaagcatga	taaacagttt	gataacctca	aaccttcagg	120
aggttacata	acaggatgatc	aagcccgtac	ttttttccta	cagtcaggtc	tgcgggcccc	180
ggtttttagct	gaaatatggg	ccttatcaga	tctgaacaag	gatgggaaga	tggaccagca	240
agagttctct	atagctatga	aactcatcaa	gttaaagttg	cagggccaac	agctgcctgt	300
agtcctccct	cctatcatga	aacaaccccc	tatgttctct	ccactaatct	ctgctcgttt	360
tgggatggga	agcatgccca	atctgtccat	tcctcagcca	ttgcctccag	ttgcacctat	420
agcaacaccc	ttgtcttctg	ctacttcagg	gaccagtatt	cctccctaata	gatgcctgct	480

<210> 61

<211> 381

<212> DNA

<213> Homo sapien

<400> 61

ctttcgattt	ccttcaattt	gtcacgtttg	atTTTatgaa	gttgttcaag	ggctaactgc	60
------------	------------	------------	------------	------------	------------	----

tgtgtattat	agctttctct	gagttccttc	agctgattgt	taaatgaatc	catttctgag	120
agcttagatg	cagtttcttt	ttcaagagca	tctaattggt	ctttaagtct	ttggcataat	180
tcttcttttt	ctgatgactt	tctatgaagt	aaactgatcc	ctgaatcagg	tgtgttactg	240
agctgcatgt	ttttaattct	ttcgtttaat	agctgcttct	cagggaccag	atagataagc	300
ttattttgat	attccttaag	ctcttggtga	agttgttcga	ttcccataat	ttccagggtca	360
cactgggttat	cccaaacttc	t				381

<210> 62

<211> 906

<212> DNA

<213> Homo sapien

<400> 62

gtggaggtga	aacggaggca	agaaaggggg	ctacctcagg	agcgagggac	aaagggggcg	60
tgaggcacct	aggccgcggc	accccggcga	caggaagccg	tcctgaaccg	ggctaccggg	120
taggggaagg	gcccgcgtag	tcctgcagg	gccccagagc	tggagtcggc	tccacagccc	180
cgggccgtcg	gcttctcact	tcctggacct	ccccggcgcc	cgggcctgag	gactggctcg	240
gcggagggag	aagaggaaac	agacttgagc	agctccccgt	tgtctcgcaa	ctccactgcc	300
gaggaactct	catttcttcc	ctcgtctcct	cacccccac	ctcatgtaga	aaggtgctga	360
agcgtccgga	gggaagaaga	acctgggcta	ccgtctcggc	cttcccmccc	ccttcccggg	420
gcgctttggt	gggcgtggag	ttgggggttg	gggggtgggt	gggggttctt	ttttggagtg	480
ctggggaaact	tttttccctt	cttcagggtca	ggggaaaggg	aatgcccaat	tcagagagac	540
atgggggcaa	gaaggacggg	agtggaggag	cttctggaac	tttgacgccg	tcacggggag	600
gcggcagctc	taacagcaga	gagcgtcacc	gcttggtatc	gaagcacaag	cggcataagt	660
ccaaacactc	caaagacatg	gggttggtga	ccccgaagc	agcatccctg	ggcacagtta	720
tcaaaccttt	ggtggagtat	gatgatatca	gctctgattc	cgacaccttc	tccgatgaca	780
tggccttcaa	actagaccga	agggagaacg	acgaacgtcg	tggatcagat	cggagcgacc	840
gcctgcacaa	acatcgtcac	caccagcaca	ggcgttcccc	ggacttacta	aaagctaaac	900
agaccg						906

<210> 63

<211> 491

<212> DNA

<213> Homo sapien

<400> 63

gacatgtttg	cctgcagggg	accagagaca	atgggattag	ccagtgtctca	ctgttcttta	60
tgcttccaga	gaggatgggg	acagctctca	ggtcagaatc	caggctgaga	aggccatgct	120
ggttgggggc	ccccggaagc	acggtccgga	tcctccctgg	catcagcgta	gacccgctgc	180
tcaggcttgg	ggtaccaaac	tcagtctctg	tactgttttg	gccccatgcg	gtgagaggaa	240
aacctagaaa	aagattgggt	gtgctaagga	atcagctgcc	ccctcatcct	ccgcatacaa	300
tgctgggtgac	aacatattcc	ctctcccagg	acacagactc	ggtgactcca	cactgggctg	360
agtggcctct	ggaggctcgt	ggcctaaggc	agggctccgt	aaggctgata	ggctgaactg	420
ggtgggggtga	gggtttctga	cccttcgctt	cccattccat	aaccgctgtc	aatgagctca	480
cactgtggtc	a					491

<210> 64

<211> 511

<212> DNA

<213> Homo sapien

<400> 64

gatggcatgg	tcgttgctaa	tgtgcctgct	gggatggagc	acttcctcct	gtgagcccag	60
gggacccgcc	tgtccctgga	gcttggggca	aggagggaag	agtgatacca	ggaagggtgg	120
gctgcagcca	ggggccagag	tcagttcagg	gagtggtcct	cggccctcaa	agctcctccg	180
gggactgctc	aggagtgatg	gtgccctgga	gtttgcccc	acttcctcct	ccaccctgga	240
agggtgcctg	ctgctccagg	cctctaggct	gggctgatgg	gtttctccag	gacacaagta	300
tcattaaagc	caccctctcc	tcagcttgct	aggccgcaca	tgtgggacag	gctgtgctca	360
caacccctc	gcctgcctg	ccctccatca	ggaggagcca	gtggaacctt	cggaaagctc	420
ccagcatctc	agcagccctc	aaaagtcgtc	ctggggcaag	ctctggttct	cctgactgga	480
ggtcactctg	gcttggcctg	ctctctctcg	c			511

<210> 65

<211> 394

<212> DNA

<213> Homo sapien

<400> 65

taaaaaagt	taacaaaggt	ttatttagac	tttcttcatt	ccccagatc	caggatgtct	60
atgtaaaccg	ttatcttaca	aagaaagcac	aatatttgg	ataaactaag	tcagtgactt	120
gcttaactga	aatagcgtcc	atccaaaagt	gggtttaagg	taaaactacc	tgacgatatt	180
ggcggggatc	ctgcagtttg	gactgcttgc	cgggtttgtc	cagggttccg	ggtctgttct	240
tggcactcat	ggggacaggc	atcctgctcg	tctgtggggc	cccgtgggag	cccttacgtg	300
aagctgaagg	tatcgaccst	agggggctct	agggcagtg	gaccttcac	cggaaactaac	360
aagggtcggg	gagaggcctc	ttgggctatg	tggg			394

<210> 66

<211> 359

<212> DNA

<213> Homo sapien

<400> 66

caagcgttcc	tttatggatg	taaattcaaa	cagtcattgt	gagccatccc	gggctgacag	60
tcacgttwaa	gacactaggt	cgggcgccac	agtgccaccc	aaggagaaga	agaatttgga	120
atttttccat	gaagatgtac	ggaaatctga	tggtgaatat	gaaaatggcc	cccaaattgga	180
attccaaaag	gttaccacag	gggctgtaag	acctagtgtg	cctcctaagt	gggaaagagg	240
aatggagaat	agtatttctg	atgcatcaag	aacatcagaa	tataaaactg	agatcataat	300
gaaggaaaat	tccatatcca	atatgagttt	actcagagac	agtagaaaact	attcccagg	359

<210> 67

<211> 450

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(450)

<223> n = A,T,C or G

<400> 67

taggaataac	aaatgtttat	tcagaaatgg	ataagtaata	cataatcacc	cttcatctct	60
taatgccctt	tcctctcctt	ctgcacagga	gacacagatg	ggtaacatag	aggcatggga	120
agtggaggag	gacacaggac	tagcccacca	ccttctcttc	ccggtctccc	aagatgactg	180

cttatagagt	ggaggaggca	aacagggtccc	ctcaatgtac	cagatgggtca	cctatagcac	240
cagctccaga	tggccacgtg	gttgcagctg	gactcaatga	aactctgtga	caaccagaag	300
atacctgctt	tgggatgaga	gggaggataa	agccatgcag	ggaggatatt	taccatccct	360
accctaagca	cagtgcgaagc	agtgcagcccc	eggctcccag	tacctgaaaa	accaaggcct	420
actgnctttt	ggatgctctc	ttggggccacg				450

<210> 68

<211> 511

<212> DNA

<213> Homo sapien

<400> 68

aagcctcctg	ccctggaaat	ctggagcccc	ttggagctga	gctggacggg	gcagggagggg	60
gctgagaggc	aagaccgtct	ccctcctgct	gcagctgctt	ccccagcagc	cactgctggg	120
cacagcagaa	acgccagcag	agaaaatggg	agccgagagt	ccttagccct	ggagctgagg	180
ctgcctctgg	gctgacccgc	tggctgtacg	tggccagaac	tggggttggc	atctggcatc	240
catttgaggc	caggggtggag	gaaagggagg	ccaacagagg	aaaacctatt	cctgctgtga	300
caacacagcc	cttgtccac	gcagcctaag	tgaggggagc	gtgatgaagt	caggcagcca	360
gtcggggagg	acgaggtaac	tcagcagcaa	tgacaccttg	tagcctatgc	gctcaatggc	420
ccggaggggc	agcaaccccc	cgcacacgtc	agccaacagc	agtgccctctg	caggcaccaa	480
gagagcgatg	atggacttga	gcgccgtgtt	c			511

<210> 69

<211> 511

<212> DNA

<213> Homo sapien

<400> 69

gtttggcaga	agacatgttt	aataacattt	tcatatttaa	aaaatacagc	aacaattctc	60
tatctgtcca	ccatcttgcc	ttgcccttcc	tggggctgag	gcagacaaag	gaaaggtaat	120
gaggttaggg	ccccaggcg	ggctaagtgc	tattggcctg	ctcctgctca	aagagagcca	180
tagccagctg	ggcacggccc	cctagcccct	ccaggttget	gaggcggcag	cgggtggtaga	240
gttcttctact	gagccgtggg	ctgcagtctc	gcagggagaa	cttctgcacc	agccctggct	300
ctacggcccc	aaagaggtgg	agccctgaga	accggaggaa	aacatccatc	acctccagcc	360
cctccagggc	ttctctctct	tcttggcctg	ccagttcacc	tgccagccgg	gctcgggccg	420
ccaggtagtc	agcgtttag	aagcagccct	ccgcagaagc	ctgccgggtca	aatctccccg	480
ctataggagc	ccccggggag	gggtcagcac	c			511

<210> 70

<211> 511

<212> DNA

<213> Homo sapien

<400> 70

caagttgaac	gtcaggcttg	gcagaggtgg	agtgtagatg	aaaacaaagg	tgtgattatg	60
aagaggatgt	gagtcctttg	ggtgtaggag	agaaaggctg	ttgagcttct	atttcaagat	120
acttttacct	gtgcaaaaag	cacattttcc	acctccttct	catggcattt	gtgtaagggtg	180
agtatgattc	ctattccatc	tgcatttttag	aggtgaagaa	taacgtacaa	gggattcagt	240
gattagcaag	ggacccctca	ctaagtgttg	atggagttag	gacagagctc	agctgtttga	300
atctcagagc	ccaggcagct	ggagctgggt	aggatcctgg	agctggcact	aatgtgaggt	360
gcattccctc	caaccaggc	tcagatccgg	aacctgaccg	tgctgacccc	cgaaggggag	420

gcagactaca	agatgtccaa	atcagaaagc	aaacacaaaa	gactgagcta	gaagttttgg	1620
ataaacagtg	tgacctggaa	attatggaaa	tcaaacaact	tcaacaagag	cttaaggaat	1680
atcaaaataa	gcttatctat	ctggtccctg	agaagcagct	attaaacgaa	agaattaaaa	1740
acatgcagct	cagtaacaca	cctgattcag	ggatcagttt	acttcataaa	aagtcatacag	1800
aaaaggaaga	attatgccaa	agacttaaag	aacaattaga	tgctcttgaa	aaagaaactg	1860
catctaagct	ctcagaaatg	gattcattta	acaatcagct	gaaggaaactc	agagaaagct	1920
ataatacaca	gcagttagcc	cttgaacaac	ttcataaaat	caaacgtgac	aaattgaagg	1980
aaatcgaaag	aaaaagatta	gagcaaaaaa	aaaaaaa			2017

<210> 73

<211> 414

<212> DNA

<213> Homo sapien

<400> 73

atggcagtga	cattcaccat	catgggaacc	accttccctt	ttcttcagga	ttctctgtag	60
tggaagagag	caccagtggt	tgggctgaaa	acatctgaaa	gtagggagaa	gaacctaaaa	120
taatcagtat	ctcagagggc	tctaaggtgc	caagaagtct	cactggacat	ttaagtgcc	180
acaaaggcat	actttcggaa	tgcgaagtc	aaaactttct	aacttctgtc	tctctcagag	240
acaagtgaga	ctcaagagtc	tactgcttta	gtggcaacta	cagaaaactg	gtgttaccca	300
gaaaaacagg	agcaattaga	aatgggtcca	atatttcaaa	gctccgcaaa	caggatgtgc	360
tttcctttgc	ccatttaggg	tttcttctct	ttcctttctc	tttattaacc	acta	414

<210> 74

<211> 1567

<212> DNA

<213> Homo sapien

<400> 74

atatctagaa	gtctggagtg	agcaaacaag	agcaagaaac	aaaaagaagc	caaaagcaga	60
aggtccaat	atgaacaaga	taaattctatc	ttcaaagaca	tattagaagt	tgggaaaata	120
attcatgtga	actagacaag	tgtgttaaga	gtgataagta	aaatgcacgt	ggagacaagt	180
gcatccccag	atctcagggg	cctccccctg	cctgtcacct	ggggagttag	aggacaggat	240
agtgcattgt	ctttgtctct	gaatttttag	ttatatgtgc	tgtaattgtg	ctctgaggaa	300
gccccggaa	agtctatccc	aacatatcca	catcttatat	tccacaaatt	aagctgtagt	360
atgtacccta	agacgctgct	aattgactgc	cacttcgcaa	ctcaggggag	gctgcatttt	420
agtaatgggt	caaattgattc	acttttttatg	atgcttccaa	aggtgccttg	gcttctcttc	480
ccaactgaca	aatgccaag	ttgagaaaaa	tgatcataat	tttagcataa	acagagcagt	540
cggcgacacc	gattttataa	ataaactgag	caccttcttt	ttaaacaaac	aaatgcgggt	600
ttattttctca	gatgatgttc	atccgtgaat	gggtccaggga	aggacctttc	accttgacta	660
tatggcatta	tgatcatcaca	agctctgagg	cttctccttt	ccatcctgcg	tggacagcta	720
agacctcagt	tttcaatagc	atctagagca	gtgggactca	gctgggggtga	tttcgcccc	780
catctccggg	ggaatgtctg	aagacaattt	tgttacctca	atgagggagt	ggaggaggat	840
acagtgtctac	taccaactag	tggataaagg	ccagggatgc	tgctcaacct	cctaccatgt	900
acaggacgtc	tccccattac	aactacccaa	tccgaagtgt	caactgtgtc	aggactaaga	960
aaccttggtt	ttgagttagaa	aagggcctgg	aaagagggga	gccaacaaat	ctgtctgctt	1020
cctcacatta	gtcattggca	aataagcatt	ctgtctcttt	ggctgctgcc	tcagcacaga	1080
gagccagaac	tctatcgggc	accaggataa	catctctcag	tgaacagagt	tgacaaggcc	1140
tatgggaaat	gcctgatggg	attatcttca	gcttggttag	cttctaagtt	tctttccctt	1200
cattctaccc	tgcaagccaa	gttctgtaag	agaaatgcct	gagttctagc	tcagggttttc	1260
ttactctgaa	tttagatctc	cagacccttc	ctggccacaa	ttcaaattaa	ggcaacaaac	1320

atataccttc	catgaagcac	acacagactt	ttgaaagcaa	ggacaatgac	tgcttgaatt	1380
gaggccttga	ggaatgaagc	tttgaaggaa	aagaatactt	tgtttccagc	ccccctccca	1440
cactcttcat	gtgttaacca	ctgccttcct	ggaccttgga	gccacggtga	ctgtattaca	1500
tggtgttata	gaaaactgat	tttagagttc	tgatcgttca	agagaatgat	taaatataca	1560
tttccta						1567

<210> 75
 <211> 240
 <212> DNA
 <213> Homo sapien

<400> 75						
tcgagcggcc	gcccgggcag	gtccttcaga	cttggactgt	gtcacactgc	caggcttcca	60
gggctccaac	ttgcagacgg	cctgttggtg	gacagtctct	gtaatcgga	aagcaaccat	120
ggaagacctg	ggggaaaaca	ccatggtttt	atccaccctg	agatctttga	acaacttcat	180
ctctcagcgt	gcggagggag	gctctggact	ggatatttct	acctcggcgc	cgaccacgct	240

<210> 76
 <211> 330
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(330)
 <223> n = A,T,C or G

<400> 76						
tagcgyggtc	gcggccgagg	ycctgcttyc	tgtccagccc	agggcctgtg	gggtcagggc	60
gggtgggtgca	gatggcatcc	actccggtgg	cttccccatc	tttctctggc	ctgagcaagg	120
tcagcctgca	gccagagtac	agagggccaa	cactggtggt	cttgaacaag	ggccttagca	180
ggccctgaag	gcccctctct	gtagtgttga	acttcttgga	gccaggccac	atgttctcct	240
cataccgcag	gytagygatg	gtgaagttga	gggtgaaata	gtattmangr	agatggctgg	300
caracctgcc	cgggcggcgc	ctcsaaatcc				330

<210> 77
 <211> 361
 <212> DNA
 <213> Homo sapien

<400> 77						
agcgtggtcg	cgcccgaggc	gtccttcagg	gtctgcttat	gcccttgttc	aagaacacca	60
gtgtcagctc	tctgtactct	ggttgcagac	tgacctgctc	caggcctgag	aaggatgggg	120
cagccaccag	agtggatgct	gtctgcaccc	atcgctctga	ccccaaaagc	cctggactgg	180
acagagagcg	gctgtactgg	aagctgagcc	agctgaccca	cggcatcact	gagctggggc	240
cctacaccct	ggacagggac	agtctctatg	tcaatggttt	cacccatcgg	agctctgtac	300
ccaccaccag	caccgggggtg	gtcagcgagg	agccattcaa	cctgcccggg	cgcccgctcg	360
a						361

<210> 78
 <211> 356

<400> 81

tcgagcggcc	gcccgggag	gtcaggaagc	acattggtct	tagagccact	gcctcctgga	60
ttccacctgt	gctgctggaca	tctccaggga	gtgcagaagg	gaagcaggtc	aaactgctca	120
gatcagtcag	actggctggt	ctcagttctc	acctgagcaa	ggtcagtctg	cagccagagt	180
acagagggcc	aacactgggtg	ttcttgaaca	agggcttgag	cagaccctgc	agaaccctct	240
tccgtggtgt	tgaacttctt	ggaaaccagg	gtgttgcatg	tttttctca	taatgcaagg	300
ttggtgatgg						310

<210> 82

<211> 571

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(571)

<223> n = A,T,C or G

<400> 82

acggtttcaa	tggacacttt	tattgtttac	ttaatggatc	atcaattttg	tctcactacc	60
tacaaatgga	atttcatctt	gtttccatgc	tgagtagtga	aacagtgaca	aagctaataca	120
taataaccta	catcaaaaaga	gaactaagct	aacactgctc	actttctttt	taacaggcaa	180
aatataaata	tatgcactct	anaatgcaca	atggtttagt	cactaaaaaa	ttcaaattggg	240
atcttgaaga	atgtatgcaa	atccaggggtg	cagtgaagat	gagctgagat	gctgtgcaac	300
tgtttaaggg	ttcctggcac	tgcatctctt	ggccactagc	tgaatcttga	catggaagggt	360
tttagctaata	gccaaagtga	gatgcagaaa	atgctaagtt	gacttagggg	ctgtgcacag	420
gaactaaaag	gcaggaaaagt	actaaatatt	gctgagagca	tccaccccag	gaaggacttt	480
accttccagg	agctccaaac	tggcaccacc	cccagtgtctc	acatgggtga	ctttatcttc	540
cgtgttccat	ttggcacagc	aagtggcagt	g			571

<210> 83

<211> 551

<212> DNA

<213> Homo sapien

<400> 83

aaggctggtg	ggtttttgat	cctgctggag	aacctccgct	ttcatgtgga	ggaagaagggt	60
aagggaag	atgcttctgg	gaacaagggt	aaagccgagc	cagccaaaat	agaagctttc	120
cgagcttcac	tttccaagct	aggggatgtc	tatgtcaatg	atgcttttgg	cactgctcac	180
agagcccaca	gctccatggt	aggagtcaat	ctgccacaga	aggctggtgg	gtttttgatg	240
aagaaggagc	tgaactactt	tgcaaaggcc	ttggagagcc	cagagcgacc	cttctctggc	300
atcctgggag	gagctaaagt	tgagacaag	atccagctca	tcaataatat	gctggacaaa	360
gtcaatgaga	tgattattgg	tggtggaatg	gcttttacct	tccttaagggt	gctcaacaac	420
atggagattg	gcacttctct	gtttgatgaa	gagggagcca	agattgtcaa	agacctaatg	480
tccaaagctg	agaagaatgg	tgtgaagatt	accttgcctg	ttgactttgt	cactgctgac	540
aagtttgatg	a					551

<210> 84

<211> 571

<212> DNA

<213> Homo sapien

<400> 84

tttgttctct	acatttttct	aaagagttac	ttaaatacagt	caactgggtct	ttgagactct	60
taagttctga	ttccaactta	gctaattcat	tctgagaact	gtggatatagg	tggcgtgtct	120
cttctagctg	ggacaaaagt	tctttgtttt	ccccctgtag	agtatcacag	accttctgct	180
gaagctggac	ctctgtctgg	gccttggact	cccaaactctg	cttgtcatgt	tcaagcctgg	240
aaatgttaat	ctttaattct	tccatatgga	tggacatctg	tctaagttga	tccttttagaa	300
cactgcaatt	atcttctttg	agtctaattt	cttcttcttt	gctttgaatc	gcatcactaa	360
acttctctc	ccatttctta	gcttcatcta	tcaccctgtc	acgatcatcc	tggagggaag	420
acatgctctt	agtaaaggct	gcaagctggg	tcacagtaact	gtccaagttt	tcctgaagtt	480
gctgaacttc	cttgtctttc	ttgttcaaag	taacctgaat	ctctccaatt	gtctcttcca	540
agtggacttt	ttctctgcgc	aaagcatcca	g			571

<210> 85

<211> 561

<212> DNA

<213> Homo sapien

<400> 85

tcattgcttg	tgatggcatc	tggaatgtga	tgagcagcca	ggaagttgta	gattttcattc	60
aatcaaagga	ttcagcatgt	gggtggaagct	gtgaggcaag	agaaacaaga	actgtatggc	120
aagttaagaa	gcacagaggc	aaacaagaag	gagacagaaa	agcagttgca	ggaagctgag	180
caagaaatgg	aggaaatgaa	agaaaagatg	agaaagtttg	ctaaatctaa	acagcagaaa	240
atcctagagc	tggaagaaga	gaatgaccgg	cttagggcag	aggtgcaccc	tgaggagat	300
acagctaaag	agtgtatgga	aacacttctt	tcttccaatg	ccagcatgaa	ggaagaactt	360
gaaaggggtca	aaatggagta	tgaaaccttt	tctaagaagt	ttcagtcctt	aatgtctgag	420
aaagactctc	taagtgaaga	ggttcaagat	ttaaagcatc	agatagaagg	taatgtatct	480
aaacaagcta	acctagaggc	caccgagaaa	catgataacc	aaacgaatgt	cactgaagag	540
ggaacacagt	ctataccagg	t				561

<210> 86

<211> 795

<212> DNA

<213> Homo sapien

<400> 86

aagccaataa	tcaccattta	ttacttaata	tatgccaacc	actgtacttg	gcagttcaca	60
aattctcacc	gttacaacaa	ccccatgagg	tatttattcc	cattctatag	atagggaaac	120
cacagctcaa	gtaagttagg	aaactgagcc	aagtatacac	agaatacgaa	gtggcaaaac	180
tagaaggaaa	gactgacact	gctatctgct	ggcctccagt	gtcctggctc	ttttcacacg	240
ggttcaatgt	ctccagcgct	gctgctgctg	ctgcattacc	atgcctcat	tgtttttctt	300
cctctgggtg	tcaactgcat	ccttcaaaga	atctaactca	ttccagagac	cacttatttc	360
tttctctctt	tctgaaatta	cttttaataa	ttcttcatga	gggggaaaag	aagatgcctg	420
ttggtagttt	tggtgtttaa	gctgctcaat	ttgggactta	aacaatttgt	tttcatcttg	480
tacatcctgt	aacagctgtg	ttttgctaga	aagatcactc	tcctctctct	ttagcatggc	540
ttctaacctc	ttcaattcat	tttctttttc	tttcaacaca	atctcaagtt	cttcaaactg	600
tgatgcagaa	gaggcctctt	tcaagttatg	ttgtgctact	tcctgaacat	gtgcttttaa	660
agattcattt	tcttcttgaa	gatcctgtaa	ccacttcctc	gtattggcta	ggcttttctc	720
tttctcttcc	aaaacagcct	tcatggtatt	catctgttcc	tcttttctct	tttaataagtt	780
caggagcttc	agaac					795

<210> 87
 <211> 594
 <212> DNA
 <213> Homo sapien

<400> 87
 caagcttttt tttttttttt aaaaagtgtt agcattaatg ttttattgtc acgcagatgg 60
 caactgggtt tatgtcttca ttttttatat ttttgtaaat taaaaaaatt acaagtttta 120
 aatagccaat ggctgggttat attttcagaa aacatgatta gactaattca ttaatgggtg 180
 cttcaagctt ttccttattg gctccagaaa attcacccac cttttgtccc ttcttaaaaa 240
 actggaatgt tggcatgcat ttgacttcac actctgaagc aacatcctga cagtcatcca 300
 catctacttc aaggaatatc acgttggaat acttttcaga gaggggaatga aagaaaggct 360
 tgatcatttt gcaaggccca caccacgtgg ctgagaagtc aactactaca agtttatcac 420
 ctgcagcgtc caaggcttcc tgaaaagcag tcttgctctc gatctgcttc accatcttgg 480
 ctgctggagt ctgacgagcg gctgtaagga ccgatggaaa tggatccaaa gcaccaaaca 540
 gagcttcaag actcgtctgt tggcttgaat tcggatccga tategccatg gcct 594

<210> 88
 <211> 557
 <212> DNA
 <213> Homo sapien

<400> 88
 aagtgttagc attaatgttt tattgtcacg cagatggcaa ctgggtttat gtcttcatat 60
 tttatatatt tgtaaattaa aaaaattmca agtttttaaat agccaatggc tggttatatt 120
 ttcagaaaac atgattagac taattcatta atgggtggctt caagcttttc cttattggct 180
 ccagaaaatt caccacactt ttgtcccttc ttaaaaaact ggaatgttgg catgcatttg 240
 acttcacact ctgaagcaac atcctgacag tcatccacat ctacttcaag gaatatcacg 300
 ttggaatact tttcagagag ggaatgaaag aaaggcttga tcattttgca aggccacac 360
 cactgtggctg agaagtcaac tactacaagt ttatcacctg cagcgtccaa ggcttcctga 420
 aaagcagtct tgctctcgat ctgcttcacc atcttggctg ctggagtctg acgagcggct 480
 gtaaggaccg atggaaatgg atccaaagca ccaaacagag cttcaagact cgctgcttgg 540
 catgaattcg gatccga 557

<210> 89
 <211> 561
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(561)
 <223> n = A,T,C or G

<400> 89
 tacaaacttt attgaaacgc acacgcgcac acacacaaac acccctgtgg atagggaaaa 60
 gcacctggcc acagggtcca ctgaaacggg gaggggatgg cagcttgtaa tgtggctttt 120
 gccacaaccc cttctgaca gggaaggcct tagattgagg cccacacctc catgggtgatg 180
 gggagctcag aatggggctc agggagaatt tgggttaggg gaggtgctag ggaggcatga 240
 gcagagggca ccctccgagt ggggtcccgga gggctgcaga gtcttcagta ctgtccctca 300

caagtatgag	gatgagatca	ataagcgtac	agagatggag	aacgaatttg	tcctcatcaa	600
gaaggatgtg	gatgaagctt	acatgaacaa	ggtagagctg	gagtctcgcc	tggaagggct	660
gaccgacgag	atcaacttcc	tcaggcagct	gtatgaagag	gagatccggg	agctgcagtc	720
ccagatctcg	gacacatctg	tggtgctgtc	catggacaac	agccgctccc	tggacatgga	780
cagcatcatt	gctgaggtca	aggcacagta	cgaggatatt	gccaaaccga	gccgggctga	840
ggctgagagc	atgtaccagg	tcaagtatga	ggagctgcag	agcctggctg	ggaagcacgg	900
ggatgacctg	cggcgacaaa	agactgagat	ctctgagatg	aaccgggaac	atcagcccgg	960
ctncaggctg	agattgaggg	cctcaaaggc	caganggctt	nctggangn	ccgccat	1017

<210> 98

<211> 561

<212> DNA

<213> Homo sapien

<400> 98

cccggagcca	gccaacgagc	ggaaaatggc	agacaatttt	tcgctccatg	atgcgttattc	60
tgggtctgga	aacccaaacc	ctcaaggatg	gcctggcgca	tgggggaacc	agcctgctgg	120
ggcagggggc	taccagggg	cttctatcc	tggggcctac	cccgggcagg	cacccccagg	180
ggcttatect	ggacaggcac	ctccaggcgc	ctaccctgga	gcacctggag	cttatcccgg	240
agcacctgca	cctggagtct	acccagggcc	accagcggc	cctggggcct	acccatcttc	300
tggacagcca	agtgccaccg	gagcctaccc	tgccactggc	ccctatggcg	cccctgctgg	360
gccactgatt	gtgccttata	acctgccttt	gcctggggga	gtggtgcctc	gcctgctgat	420
aacaattctg	ggcacggtga	agcccaatgc	aaacagaatt	gcttttagatt	tccaaagagg	480
gaatgatgtt	gccttccact	ttaaccacg	cttcaatgag	aacaacagga	gagtcattgg	540
ttgcaatata	aagctggata	a				561

<210> 99

<211> 636

<212> DNA

<213> Homo sapien

<400> 99

gggaatgcaa	caactttatt	gaaaggaaa	tgcaatgaaa	tttgttgaaa	ccttaaaagg	60
ggaaacttag	acaccccccc	tcragcgmag	kaccargtgc	araggtggac	tctttctgga	120
tggtgtagtc	agacagggtr	cgwccatctt	ccagctgttt	yccrgcaaag	atcaacctct	180
gctgatcagg	aggratgcct	tccttatctt	ggatctttgc	cttgacattc	tcgatggtgt	240
cactgggctc	caacctgagg	gtgatggctt	taccagtcag	ggtcttcacg	aagatytgca	300
tcccacctct	gagacggagc	accaggtgca	gggtrgactc	tttctggatg	ttgtagtcag	360
acagggtgcg	yccatcttcc	agctgctttc	csagcaaaga	tcaacctctg	ctggtcagga	420
ggratgcctt	ccttgctcyt	gatctttgcy	ttgacrttct	caatgggtgc	actcggctcc	480
acttcgagag	tgatggctct	accagtcagg	gtcttcacga	agatctgcat	cccacctcta	540
agacggagca	ccaggtgcag	ggtggactct	ttctggatgg	ttgtagtcag	acagggtgcg	600
tccatcttcc	agctgtttcc	cagcaaagat	caacct			636

<210> 100

<211> 697

<212> DNA

<213> Homo sapien

<400> 100

aggttgatct	ttgctgggaa	acagctggaa	gatggacgca	ccctgtctga	ctacaaccat	60
------------	------------	------------	------------	------------	------------	----

agttgcacta	ttgattttctc	tttctcccaa	tggcccccaa	agagaccaca	taaaaggaga	120
gtacatttta	agccaataag	ctgcaggatg	tacacctaac	agacctccta	gaaaccttac	180
cagaaaatgg	ggactgggta	gggaaggaaa	cttaaaagat	caacaaactg	ccagcccacg	240
gactgcagag	gctgtcacag	ccagatgggg	tggccagggt	gccacaaacc	caaagcaaag	300
tttcaaaata	atataaaatt	taaaaagttt	tgtacataag	ctattcaaga	tttctccagc	360
actgactgat	acaaagcaca	attgagatgg	cacttctaga	gacagcagct	tcaaaccacg	420
aaaaggggtga	tgagatgagt	ttcacatggc	taaatcagtg	gcaaaaacac	agtcttcttt	480
ctttctttct	ttcaaggagg	caggaaagca	attaagtggg	cacctcaaca	taagggggac	540
atgatccatt	ctgtaagcag	ttgtgaaggg	g			571

<210> 107

<211> 555

<212> DNA

<213> Homo sapien

<400> 107

caggaaccgg	agcgcgagca	gtagctgggt	gggcaccatg	gctgggatca	ccaccatcga	60
ggcgggtgaag	cgcaagatcc	aggttctgca	gcagcaggca	gatgatgcag	aggagcgagc	120
tgagcgctc	cagcgagaag	ttgagggaga	aaggcggggc	cgggaacagg	ctgaggctga	180
ggtggcctcc	ttgaaccgta	ggatccagct	ggttgaagaa	gagctggacc	gtgctcagga	240
gcgcctggcc	actgccctgc	aaaagctgga	agaagctgaa	aaagctgctg	atgagagtga	300
gagaggtatg	aaggttattg	aaaaccgggc	cttaaaagat	gaagaaaaga	tggaactcca	360
ggaaatccaa	ctcaaagaag	ctaagcacat	tgcagaagag	gcagatagga	agtatgaaga	420
ggtggctcgt	aagttgggtga	tcattgaagg	agacttggaa	cgcacagagg	aacgagctga	480
gctggcagag	tcccgttgcc	gagagatgga	tgagcagatt	agactgatgg	accagaacct	540
gaagtgtctg	agtgc					555

<210> 108

<211> 541

<212> DNA

<213> Homo sapien

<400> 108

atctacgtca	tcaatcaggc	tggagacacc	atgttcaatc	gagctaagct	gctcaatatt	60
ggctttcaag	aggccttgaa	ggactatgat	tacaactgct	ttgtgttcag	tgatgtggac	120
ctcattccga	tggacgaccg	taatgcctac	agggtgtttt	cgcagccacg	gcacatttct	180
gttgcaatgg	acaagttcgg	gtttagcctg	ccatatgttc	agtattttgg	aggtgtctct	240
gctctcagta	aacaacagtt	tcttgccatc	aatggattcc	ctaataatta	ttgggggttg	300
ggaggagaag	atgacgacat	ttttaacaga	ttagttcata	aaggcatgtc	tatatcacgt	360
ccaaatgctg	tagtagggag	gtgtcgaatg	atccggcatt	caagagacaa	gaaaaatgag	420
cccaatcctc	agagggttga	ccggatcgca	catacaaagg	aaacgatgcg	cttcgatggg	480
ttgaactcac	ttacctacaa	gggtgttgat	gtcagagata	cccgttatat	acccaaatca	540
c						541

<210> 109

<211> 411

<212> DNA

<213> Homo sapien

<400> 109

ctagacctct	aattaaaagg	cacaatcatg	ctggagaatg	aacagtctga	ccccgagggc	60
------------	------------	------------	------------	------------	------------	----

cacagcgaat	tttagggaag	gaggcaaaga	ggtgagaagg	gaaaggaaag	aaggaaggaa	120
ggagaacaat	aagaactgga	gacgttgggt	gggtcaggga	gtgtggtgga	ggctcggaga	180
gatggtaaac	aaacctgact	gctatgagtt	ttcaacccca	tagtctaggg	ccatgagggc	240
gtcagttctt	ggtggctgag	ggtccttcca	cccagcccac	ctgggggagt	ggagtgggga	300
gttctgccag	gtaagcagat	gttgtctccc	aagttcctga	cccagatgtc	tggcaggata	360
acgctgacct	gttcctccta	caagggacct	gaaagtaatt	ttgctcttta	c	411

<210> 110

<211> 451

<212> DNA

<213> Homo sapien

<400> 110

ccgaattcaa	gcgtcaacga	tccytccctt	accatcaa	caattggcca	ccaatggtac	60
tgaacctacg	agtaaccgga	ctacgggcgg	actaatcttc	aactcctaca	tacttcccc	120
attattccta	gaaccaggcg	acctgcgact	ccttgacgtt	gacaatcgag	tagtactccc	180
gattgaagcc	cccattcgta	taataattac	atcacaagac	gtcttgcaact	catgagctgt	240
ccccacatta	ggcttaaaaa	cagatgcaat	tcccggaagt	ctaagccaaa	ccactttcac	300
cgctacacga	ccgggggtat	actacggtca	atgctctgaa	atctgtggag	caaaccacag	360
tttcatgccc	atcgctcctag	aattaattcc	cctaaaaatc	tttgaaatag	ggcccgtatt	420
taccctatag	cacccctctt	acccctctta	g			451

<210> 111

<211> 541

<212> DNA

<213> Homo sapien

<400> 111

gctcttcaca	cttttattgt	taattctctt	cacatggcag	atacagagct	gtcgtcttga	60
agaccaccac	tgaccaggaa	atgccacttt	tacaaaatca	tccccctttt	tcatgattgg	120
aacagttttc	ctgaccgtct	gggagcggtt	aagggtgacc	agcacatttg	cacatgcaaa	180
aaaggagtga	ccccaaaggcc	tcaaccacac	ttcccagagc	tcaccatggg	ctgcagggtga	240
cttgccaggt	ttgggggttcg	tgagctttcc	ttgctgctgc	ggtggggagg	ccctcaagaa	300
ctgagaggcc	gggggtatgct	tcatgagtgt	taacattttac	gggacaaaag	cgcatcatta	360
ggataaggaa	cagccacagc	acttcatgct	tgtgagggtt	agctgtagga	gcgggtgaaa	420
ggattccagt	ttatgaaaat	ttaaagcaaa	caacggtttt	tagctgggtg	ggaaacagga	480
aaactgtgat	gtcggccaat	gaccaccatt	tttctgccc	tgtgaaggtc	cccatgaaac	540
c						541

<210> 112

<211> 521

<212> DNA

<213> Homo sapien

<400> 112

caagcgcttg	gcgtttggac	ccagttcagt	gaggttcttg	ggttttgtgc	ctttggggat	60
tttggtttga	cccaggggtc	agccttagga	aggtcttcag	gaggaggccg	agttccctt	120
cagtaccacc	cctctctccc	cactttccct	ctcccggcaa	catctctggg	aatcaacagc	180
atattgacac	gttggagccg	agcctgaaca	tgccctctcg	ccccagcaca	tggaaaaccc	240
ccttcccttg	ctaagggtgc	tgagtttctg	gctcttgagg	catttccaga	cttgaaattc	300
tcatcagtc	attgctcttg	agtctttgca	gagaacctca	gatcaggtgc	acctgggaga	360

```

aagactttgt cccacttac agatctatct cctcccttgg gaagggcagg gaatggggac 420
ggtgtatgga ggggaaggga tctcctgcgc ccttcattgc cacacttggg gggaccatga 480
acatctttag tgtctgagct tctcaaatta ctgcaatagg a 521

```

```

<210> 113
<211> 568
<212> DNA
<213> Homo sapien

```

```

<400> 113
agcgtcaa at cagaatggaa aagactcaaa accatcatca acaccaagat caaaaggaca 60
agratccttc aagaaacagg aaaaaactcc taaaacacca aaaggaccta gttctgtaga 120
agacattaaa gcaaaaatgc aagcaagtat agaaaaaggt ggttctcttc ccaaagtgga 180
agccaaattc atcaattatg tgaagaattg cttccggatg actgaccaag aggctattca 240
agatctctgg cagtggagga agtctcttta agaaaatagt ttaaacaatt tgttaaaaaa 300
ttttccgtct tatttcattt ctgtaacagt tgatatctgg ctgtcctttt tataatgcag 360
agtgagaact ttccctaccg tgtttgataa atgttggtcca ggttctattg ccaagaatgt 420
gttggtccaa atgcctgttt agtttttaaa gatggaactc caccctttgc ttgggttttaa 480
gtatgtatgg aatgttatga taggacatag tagtagcggg ggtcagacat ggaaatggtg 540
ggsmgacaaa aatatacatg tgaaataa 568

```

```

<210> 114
<211> 483
<212> DNA
<213> Homo sapien

```

```

<400> 114
tccgaattcc aagcgaatta tggacaaaacg attcctttta gaggattact tttttcaatt 60
tcgggttttag taatctaggc ttgacctgta aagaatacaa cgatggattt taaatactgt 120
ttgtggaatg tgtttaaagg attgattcta gaacctttgt atatttgata gtattttctaa 180
ctttcatttc tttactgttt gcagttaatg ttcattgtct gctatgcaat cgtttatatg 240
cacgtttctt taattttttt agatttttct ggatgtatag tttaaacaac aaaaagtcta 300
tttaaaactg tagcagtagt ttacagttct agcaaagagg aaagttgtgg gggttaaactt 360
tgtattttct ttcttataga ggcttctaaa aagggtattt tatatgttct ttttaacaaa 420
tattgtgtac aacctttaaa acatcaatgt ttggatcaaa acaagacca gcttattttc 480
tgc 483

```

```

<210> 115
<211> 521
<212> DNA
<213> Homo sapien

```

```

<400> 115
tgtggtggcg cgggctgagg tggaggccca ggactctgac cctgcccctg ccttcagcaa 60
ggcccccggc agcgccggcc actacgaact gccgtgggtt gaaaaatata ggccagtaaa 120
gctgaatgaa attgtcggga atgaagacac cgtgagcagg ctagagggtc ttgcaaggga 180
aggaaatgtg cccaacatca tcattgcggg ccctccagga accggcaaga ccacaagcat 240
tctgtgcttg gcccgggccc tgctggggcc agcactcaaa gatgccatgt tggaactcaa 300
tgcttcaaat gacaggggca ttgacgttgt gaggaataaa attaaaatgt ttgctcaaca 360
aaaagtcact cttcccaaag gccgacataa gatcatcatt ctggatgaag cagacagcat 420
gaccgacgga gccagcaag ccttgaggag aaccatggaa atctactcta aaaccactcg 480

```



```

tgtactaaaa cccaacataa tttcttacta tgtgagtgag gatctgaagg ataagaaagg      480
agacattctc ttggatgaaa attgctgtgt agaagtcctt gcctgacaaa agatggaaag      540
aatgccttt t                                     551

```

```

<210> 138
<211> 531
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(531)
<223> n = A,T,C or G

```

```

<400> 138
gactggttct ttatttcaaa aagacacttg tcaatattca gtrtcaaaac agttgcacta      60
ttgatttctc ttttcccaa tcggcccaa agagaccaca taaaaggaga gtacatttta      120
agccaataag ctgcaggatg tacacctaac agacctcta gaaaccttac cagaaaatgg      180
ggactgggta gggaaggaaa cttaaaagat caacaaactg ccagcccacg gactgcagag      240
gctgtcacag ccagatgggg tggccagggt gccacaaacc caaagcaaag tttcaaaata      300
atataaaatt taaaaagttt tgtacataag ctattcaaga tttctccagc actgactgat      360
acaaagcaca attgagatgg cacttctaga gacagcagct tcaaaccacg aaaaggggtga      420
tgagatgaag tttcacatgg ctaaatacgt ggcaaaaaca cagtcttctt tctttctttc      480
tttcaaggan gcaggaaagc aattaagtgg tcaccttaac ataaggggga c                531

```

```

<210> 139
<211> 521
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(521)
<223> n = A,T,C or G

```

```

<400> 139
tgggtgggca ccatggctgg gatcaccacc atcgaggcgg tgaagcgcaa gatccaggtt      60
ctgcagcagc aggcagatga tgcagaggag cgagctgagc gcctccagcg agaagttgag      120
ggagaaaggc gggcccggga acaggctgag gctgaggtgg cctccttgaa ccgtaggatc      180
cagctggttg aagaagagct ggaccgtgct caggagcgcc tggccactgc cctgcaaaag      240
ctggaagaag ctgaaaaagc tgctgatgag agtgagagag gtatgaaggt tattgaaaac      300
cgggccttaa aagatgaaga aaagatggaa ctccaggaaa tccaactcaa agaagctaag      360
cacattgcag aagaggcaga taggaagtat gaagaggtgg ctcgtaagtt ggtgatcatt      420
gaaggagact tggaaccgca cagaaggaac gagcttgagc ttggcaaaag tcccgttgcc      480
cagagatggg atgaaccaga ttagactgat ggaccanaac c                521

```

```

<210> 140
<211> 571
<212> DNA
<213> Homo sapien

```


<220>
 <221> misc_feature
 <222> (1)...(571)
 <223> n = A,T,C or G

<400> 140
 aggggcnngcg ggtgcgtggg ccactgggtg accgacttag cctggccaga ctctcagcac 60
 ctggaagcgc cccgagagt acagcgtgag gctgggaggg aggacttggc ttgagcttgt 120
 taaactctgc tctgagcctc cttgtgcctt gcatttagat ggctcccgca aagaagggtg 180
 gcgagaagaa aaagggccgt tctgccatca acgaagtggg aacccgagaa tacaccatca 240
 acattcacaa gcgcattccat ggagtgggct tcaagaagcg tgcacctcgg gcactcaaag 300
 agattcggaa atttgccatg aaggagatgg gaactccaga tgtgcgcatt gacaccaggc 360
 tcaacaaagc tgtctgggcc aaaggaataa ggaatgtgcc ataccgaatc cgggtgtgcgg 420
 ctgtccagaa aacgtaatga ggatgaagat tcaccaaata agctatatac tttggttacc 480
 tatgtacctg ttaccacttt caaaaatcta cagacagtca atgtggatga gaactaatcg 540
 ctgatcgtca gatcaaataa agttataaaa t 571

<210> 141
 <211> 531
 <212> DNA
 <213> Homo sapien

<400> 141
 tcgggagcca cacttggccc tcttctctc caaagsgcca gaacctcctt ctctttggag 60
 aatggggagg cctcttggag acacagaggg tttcaccttg gatgacctct agagaaattg 120
 cccaagaagc ccacctcttg gtcccaacct gcagacccca cagcagtcag ttggtcaggc 180
 cctgctgtag aaggtcactt ggctccattg cctgcttcca accaatgggc aggagagaag 240
 gcctttatct ctgcgccacc cattctctct gtaccagcac ctccgttttc agtcagtgtt 300
 gtccagcaac ggtaccgttt acacagtcac ctcagacaca ccatttcacc tcccttgcca 360
 agctgttagc cttagagtga ttgcagtga cactgtttac acaccgtgaa tccattccca 420
 tcagtccatt ccagttggca ccagcctgaa ccatttggtt cctgggtgta actggagtcc 480
 tgtttacaag gtggagtcgg ggcttgcgtga cttctcttca tttgagggca c 531

<210> 142
 <211> 491
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(491)
 <223> n = A,T,C or G

<400> 142
 acctagacag aaggtgggtg agggaggact ggtaggaggc tgaggcaatt ccttggtagt 60
 ttgtcctgaa accctactgg agaagtcagc atgaggcacc tactgagaga agtgcccaga 120
 aactgctgac tgcattctgtt aagagttaac agtaaagagg tagaagtgtg tttctgaatc 180
 agagtggaag cgtctcaagg gtcccacagt ggaggtccct gagctacctc ccttcctgta 240
 gtgggaagag tgaagcccat gaagaactga gatgaagcaa ggatgggggtt cctgggctcc 300
 aggcaagggc tgtgctctct gcagcagga gccccacgag tcagaagaaa agaactaatc 360
 atttggtgca agaaaccttg cccggatact agcggaaaac tggaggcggn ggtgggggca 420

<211> 521
 <212> DNA
 <213> Homo sapien

<400> 146

atggctgctg	gatttaggtg	gtaatagggg	ctgtggggcca	taaatctgaa	gccttgagaa	60
ccttgggtct	ggagagccat	gaagagggaa	ggaaaagagg	gcaagtcctg	aacctaacca	120
atgacctgat	ggattgctcg	accaagacac	agaagtgaag	tctgtgtctg	tgcacttccc	180
acagactgga	gtttttggtg	ctgaatagag	ccagttgcta	aaaaattggg	ggtttggtga	240
agaaatctga	ttgttgtgtg	tattcaatgt	gtgattttta	aaataaacag	caacaacaat	300
aaaaaccctg	actggctgtt	ttttccctgt	attctttaca	actatTTTTT	gaccctctga	360
aaattattat	acttcaccta	aatggaagac	tgctgtgttt	gtggaaattt	tgtaattttt	420
taatttattt	tattctctct	cctttttatt	ttgcctgcag	aatccgttga	gagactaata	480
aggcttaata	tttaattgat	ttgtttaata	tgtatataaa	t		521

<210> 147
 <211> 562
 <212> DNA
 <213> Homo sapien

<400> 147

ggcatgcgag	cgcactcggc	ggacgcaagg	gcgggcgggga	gcacacggag	cactgcaggc	60
gccgggttgg	gacagcgtct	tcgctgctgc	tggatagtcg	tgTTTTTcggg	gatcgaggat	120
actcaccaga	aaccgaaaat	gccgaaacca	atcaatgtcc	gagttaccac	catggatgca	180
gagctggagt	ttgcaatcca	gccaaataca	actggaaaac	agctTTTTTga	tcagggtgga	240
aagactatcg	gcctcgggga	agtgtggtac	tttggcctcc	actatgtgga	taataaagga	300
tttctacct	ggctgaagct	ggataagaag	gtgtctgccc	aggaggtcag	gaaggagaat	360
cccctccagt	tcaagttccg	ggccaaagtt	ctaccctgaa	gatgtggctg	aggagctcat	420
ccaggacatc	accagaaaac	ttttcttctt	tcaagtgaag	gaaggaaatc	ttagcgatga	480
gatctactgc	cccccttgar	actgccgtgc	tcttgggggtc	ctacgcttgt	gcatgcccaag	540
tttggggact	accaccaaga	ag				562

<210> 148
 <211> 820
 <212> DNA
 <213> Homo sapien

<400> 148

gaaggagtgc	ggatactcag	cattgatgca	ccccaatTtc	aaagcggcat	tcttcggcag	60
gtctctggga	caatctctag	ggtcactacc	tggaaactcg	ttagggtaca	actgaatgct	120
gaaaggaaaag	aacacctgca	gaaccggaca	gaaattcacc	ccggcgatca	gctgattgat	180
ctcggtcgac	cagaagtcac	ggctaaagat	gacgaggacg	ttgtcaattc	cctgggcttt	240
tcgaagttag	tccagcagca	gtctgaggta	ttcggggccgg	ttatgcacct	ggaccaccag	300
caccagctcc	cggggggccc	aggtgccagc	cttatctaca	ttcctcaggg	totgatcaaa	360
gttcagctgg	tacaccaggg	accggtaccg	cagcgtcagg	ttgtccgctc	gggctggggg	420
accgcgggga	ccagggaagc	cgccgacacg	ttggagaccc	tgcggatgcc	cacagccaca	480
gaggggtggt	ccccaccgcg	gccgcgggca	ccccgcgcgg	gttcggcgctc	cagcaacggt	540
ggggcgaggg	cctcgttctt	cctttgtcgc	ccattgctgc	tccagaggac	gaagccgcag	600
gcgggccacca	cgagcgtcag	gattagcacc	ttccgtttgt	agatgcggaa	cctcatggctc	660
tccagggccg	ggagcgcagc	tacagctcga	gcgtcggcgc	cgccgctagg	agccgcggct	720
cggcttcgtc	tccgtcctct	ccattcagca	ccacgggtcc	cggaaaaagc	tcagccscgg	780

cacctctagg	aggtggtggt	ggcatagggt	atgaagctaa	tcttggtggt	ccaccagcaa	420
ccatgagtgg	ttccatgatg	ggaagtgaca	tgctgactga	gcgctttggg	cagggaggtg	480
cggggcctgt	gggtggacag	ggctcctagag	gaatggggcc	tggaactcca	gcaggatgatg	540
gtagagggag	agaagagtac	gaaggg				566

<210> 152
 <211> 518
 <212> DNA
 <213> Homo sapien

<400> 152						
ttcgtgaaga	ccctgactgg	taagaccatc	actctcgaag	tggagcccga	gtgacaccat	60
tgagaatgtc	aaggcaaaga	tccaagacaa	ggaaggcatc	cctcctgacc	agcakaggtt	120
gatctttgct	gggaaacagc	tggaagatgg	acgcaccctg	tctgactaca	acatccagaa	180
agagtccacc	ctgcacctgg	tgctccgtct	cagaggtggg	atgcaaactc	tctgtaagac	240
cctgactggt	aagaccatca	ccctcgaggt	ggagcccagt	gacaccatcg	agaatgtcaa	300
ggcaaagatc	caagataagg	aaggcatccc	tcttgatcag	cagaggttga	tctttgctgg	360
gaaacagctg	gaagatggac	gcaccctgtc	tgactacaac	atccagaaag	agtccactct	420
gcacttggtc	ctgcgcttga	gggggggtgt	ctaagtttcc	ccttttaagg	tttcaacaaa	480
tttcattgca	ctttcctttc	aataaagttg	ttgcattc			518

<210> 153
 <211> 542
 <212> DNA
 <213> Homo sapien

<400> 153						
gcgcgggtgc	gtgggccact	gggtgaccga	cttagcctgg	ccagactctc	agcacctgga	60
agcgcgccga	gagtgcacgc	gtgaggctgg	gagggaggac	ttggcttgag	cttggttaaac	120
tctgtctctga	gcctccttgt	cgctgcatt	tagatggctc	ccgcaaagaa	gggtggcgag	180
aagaaaaagg	gccgttctgc	catcaacgaa	gtggttaacc	gagaatacac	catcaacatt	240
cacaagcgca	tccatggagt	gggcttcaag	aagcgtgcac	ctcgggcact	caaagagatt	300
cggaaatttg	ccatgaagga	gatgggaact	ccagatgtgc	gcattgacac	caggctcaac	360
aaagctgtct	gggcccagg	aataaggaat	gtgccatacc	gaatccgtgt	gcggtgtcc	420
agaaaacgta	atgaggatga	agattcacca	aataagctat	atactttggt	tacctatgta	480
cctgttacca	ctttcaaaaa	tctacagaca	gtcaatgtgg	atgagaacta	atcgtgatc	540
gt						542

<210> 154
 <211> 411
 <212> DNA
 <213> Homo sapien

<400> 154						
aattctttat	ttaaataaac	aaactcatct	tctcaagcc	ccagaccatg	gtaggcagcc	60
ctccctctcc	atccctcac	cccaccctt	agccacagt	aagggaatgg	aaaatgagaa	120
gccacgaggg	cccctgccag	ggaaggctgc	cccagatgtg	tggtgagcac	agtcagtga	180
gctgtggctg	gggcagcagc	tgccacaggc	tctccctat	aaattaagtt	cctgcagcca	240
cagctgtggg	agaagcatac	ttgtagaagc	aaggccagtc	cagcatcaga	aggcagaggg	300
agcatcagt	actcccagcc	atggaatgaa	cggaggacac	agagctcaga	gacagaacag	360
gccaggggga	agaaggagag	acagaatagg	ccagggcagc	gcggtgaggg	a	411

<211> 936
 <212> DNA
 <213> Homo sapien

<400> 161

taattttotta	gtcgttttga	atccttaago	atgcaaaagc	tttgaacaga	agggttcaca	60
aaggaaccag	ggttgtctta	tggcatccag	ttaagccaga	gctgggaatg	cctctgggtc	120
atccacatca	ggagcagaag	cacttgactt	gtcggtcctg	ctgccacggg	ttgggcgccc	180
accacgccc	cgtccacctc	gtcctccctt	gccgccacgt	cctgggcggc	caaggctctc	240
aaaattgata	tccagctgag	acgttatata	atttgctggc	ttccggaaat	gatgggtccat	300
aaccgaatct	tcagcatgag	cctcttcact	ctttgattta	tgaagaacaa	atcccttctt	360
ccactgccc	tcagcacctt	catttggttt	tggatatta	aattctactt	ttgcccgggc	420
cttattttga	atagccttcc	actcatccaa	agtcactctt	tttggaccct	cctctttttac	480
ctcttcaact	tcattctcct	tattttcagt	gtctgccact	ggatgatgtt	cttcaccttc	540
aggtgtttcc	tcagtcacat	ttgattgata	caagtcagtt	aattcgtctt	tgacagttcc	600
ccagttgtga	gatacgctac	ctccacgttt	gtcctcgtgc	ttcaggccag	atctatcaact	660
tccactatgc	ctatcaaatt	caggtttgcc	acgagaatca	aatccatctc	ctcggcccat	720
tccaggtcca	cggccccctc	gacctcttcc	aagaccacca	cgacctcgaa	taggtcgggc	780
aataatcggt	ctatcaactg	aaaattcgcc	tccttcaccc	ttttcttcaa	gtggcttttc	840
gaatcttcgt	tcacgaggtg	gtcgcctttc	tggctcttca	tcaattattt	tccttccacc	900
ctgaagttgt	tgatcaggtc	ttcttccaac	tctgtgc			936

<210> 162
 <211> 950
 <212> DNA
 <213> Homo sapien

<400> 162

aagcggatgg	acctgagtca	gccgaatcct	agcccccttc	cttgggcctg	ctgtggtgct	60
cgacatcagt	gacagacgga	agcagcagac	catcaaggct	acgggaggcc	cggggcgctt	120
gcgaagatga	agtttggtg	cctctccttc	cggcagcctt	atgctggctt	tgtcttaaat	180
ggaatcaaga	ctgtggagac	gcgctggcgt	cctctgctga	gcagccagcg	gaactgtacc	240
atcgccgtcc	acattgctca	cagggactgg	gaaggcgatg	cctgtcggga	gctgctgggtg	300
gagagactcg	ggatgactcc	tgtcagatt	caggccttgc	tcaggaaagg	ggaaaagtth	360
ggtcgaggag	tgatagcggg	actcgttgac	attggggaaa	ctttgcaatg	ccccgaagac	420
ttaactccc	atgaggttgt	ggaactagaa	aatcaagctg	cactgaccaa	cctgaagcag	480
aagtacctga	ctgtgatttc	aaaccccagg	tggttactgg	agcccatacc	taggaaagga	540
ggcaaggatg	tattccaggt	agacatccca	gagcacctga	tccctttggg	gcatgaagtg	600
tgacaagtgt	gggtcctga	aaggaatggt	ccrgagaaac	cagctaaatc	atggcacctt	660
caatttgcca	tcgtgacgca	gacctgtata	aattagggtta	aagatgaatt	tccactgctt	720
tggagagtcc	caccactaa	gcactgtgca	tgtaaacagg	ttcctttgct	cagatgaagg	780
aagtaggggg	tggggctttc	cttgtgtgat	gcctccttag	gcacacaggc	aatgtctcaa	840
gtactttgac	cttagggtag	aaggcaaagc	tgccagtaaa	tgtctcagca	ttgctgctaa	900
ttttggctct	gctagtttct	ggattgtaca	aataaatgtg	ttgtagatga		950

<210> 163
 <211> 475
 <212> DNA
 <213> Homo sapien

<220>

<400> 166

```

agcgtggtcg cggccgaggt caagaacccc gccgcacct gccgtgacct caagatgtgc      60
cactctgact ggaagagtgg agagtactgg attgaccca accaaggctg caacctggat      120
gccatcaaag tcttctgcaa catggagact ggtgagacct gcgtgtacct cactcagccc      180
agtgtggccc agaagaactg gtacatcagc aagaaccca aggacaagag gcatgtctgg      240
ttcggcgaga gcatgaccga tggattccag ttcgagtatg gcggccaggg ctccgaccct      300
gccgatgtgg acctgcccg gcgcccgctc ga                                     332

```

<210> 167

<211> 332

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(332)

<223> n = A,T,C or G

<400> 167

```

tcgagcggtc gcccgggcag gtccacatcg gcagggtcgg agccctggcc gccatactcg      60
aactggaatc catcggnatc gctctcgccg aaccagacat gcctcttgnc cttggggttc      120
ttgctgatgt accagntctt ctggggcaca ctgggctgag tggggtacac gcaggctctca      180
ccantctcca tgttgcanaa gactttgatg gcatccaggt tgcagccttg gttgggggtca      240
atccagtact ctccactctt ccagacagag tggcacatct tgaggtcacg gcagggtgcgg      300
gcgggggttct tgacctcggt cgcgaccacg ct                                     332

```

<210> 168

<211> 276

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(276)

<223> n = A,T,C or G

<400> 168

```

tcgagcggcc gcccgggcag gtccctctca gagcggtagc tgttcttatt gccccggcag      60
cctccataga tnaagttatt gcangagttc ctctccacgt caaagtacca gcgtgggaag      120
gatgcacggc aaggccaggt gactgcgttg gcggtgcagt attcttcata gttgaacata      180
tcgctggagt ggacttcaga atcctgcctt ctgggagcac ttgggacaga ggaatccgct      240
gcattcctgc tgggtggacct cggccgcgac cacgct                                     276

```

<210> 169

<211> 276

<212> DNA

<213> Homo sapien

<400> 169

```

agcgtggtcg cggccgaggt ccaccagcag gaatgcagcg gattcctctg tcccaagtgc      60
tcccagaagg caggattctg aagaccactc cagcgatatg ttcaactatg aagaatactg      120

```

```

caccgccaac gcagtcactg ggccttgccg tgcatacttc ccacgctggg actttgacgt      180
ggagaggaac tcttgcaata acttcatcta tggaggctgc cggggcaata agaacagcta      240
ccgctctgag gaggacctgc ccgggcgggc gctcga                                276

```

```

<210> 170
<211> 332
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(332)
<223> n = A,T,C or G

```

```

<400> 170
tcgagcggcc gcccgggcag gtccacatcg gcagggtcgg agccctggcc gccatactcg      60
aactggaatc catcgggtcat gctctcgccg aaccagacat gcctcttgtc cttgggggttc      120
ttgctgatgt accagttctt ctggggccaca ctgggctgag tgggggtacac gcagggtctca      180
ccagtctcca tgttgccagaa gactttgatg gcatccaggt tgcagccttg gttgggggtca      240
atccagtact ctccactctt ccagccagaa tggcacatct tgaggtcacg gcangtgccg      300
gcgggggttct tgacctcggc cgcgaccacg ct                                332

```

```

<210> 171
<211> 333
<212> DNA
<213> Homo sapien

```

```

<400> 171
agcgtggtcg cggccgaggt caagaaaccc cgcccgacc tgccgtgacc tcaagatgtg      60
ccactctggc tggaagagtg gagagtactg gattgacccc aaccaaggct gcaacctgga      120
tgccatcaaa gtcttctgca acatggagac tgggtgagacc tgccgtgtacc ccaactcagcc      180
cagtgtggcc cagaagaact ggtacatcag caagaacccc aaggacaaga ggcattgtctg      240
gctcggcgag agcatgaccg atggattcca gttcgagtat ggccggccagg gctccgaccc      300
tgccgatgtg gacctgcccg ggcggccgct cga                                333

```

```

<210> 172
<211> 527
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(527)
<223> n = A,T,C or G

```

```

<400> 172
agcgtggtcg cggccgaggt cctgtcagag tggcactggg agaagntcca ggaaccctga      60
actgtaaggg ttcttcatca gtgccaacag gatgacatga aatgatgtac tcagaagtgt      120
cctgnaatgg ggcccatgan atggttgncg gagagagagc ttcttgctct acattcggcg      180
ggtatggtct tggcctatgc cttatggggg tggccgttgn gggcggtgng gtccgcctaa      240
aaccatgttc ctcaaagatc atttgttgcc caacactggg ttgctgacca naagtgccag      300

```



```

gcaatgacaa caagaccttc gactcttcct gccacttctt tgccacaaag tgcaccctgg      120
agggcaccaa gaaggccac aagctccacc tggactacat cgggccttgc aaatacatcc      180
ccccttgctt ggactctgag ctgaccgaat tccccctgcg catgcgggac tggctcaaga      240
acgtcctggg caccctgtat gagagggatg aggacaacaa ccttctgact gagaagcana      300
agctgcgggt gaagaanac catgagaatg anaagcgctt gnaggcanga gaccaccccg      360
tggagctgct ggcccgggac ttcgagaaga actataacat gtacatcttc cctgtacact      420
ggcagttcgg ccagacctcg gccgcgacca cgct                                454

```

<210> 181

<211> 102

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(102)

<223> n = A,T,C or G

<400> 181

```

agcgtggntg cggacgacgc ccacaaagcc attgtatgta gttttanttc agctgcaaan      60
aataccncca gcatccacct tactaaccag catatgcaga ca                                102

```

<210> 182

<211> 337

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(337)

<223> n = A,T,C or G

<400> 182

```

tcgagcgggt gccccgggcag gtctggggcg atagcaccgg gcatattttg gaatggatga      60
ggtctggcac cctgagcagc ccagcgagga cttggtctta gttgagcaat ttggctagga      120
ggatagtatg cagcacgggt ctgagtctgt gggatagctg ccatgaagna acctgaagga      180
ggcgctgggt ggtanggggt gattacaggg ctgggaacag ctcgtacact tgccattctc      240
tgcataactt ggntagttag gcgagcctgg cgctcttctt tgcgctgagc taaagctaca      300
tacaatggct ttgnggacct cggccgcgac cacgctt                                337

```

<210> 183

<211> 374

<212> DNA

<213> Homo sapien

<400> 183

```

tcgagcgggc gccccgggcag gtccattttc tccctgacgg tcccacttct ctccaattct      60
gtagttcaca ccattgtcat gacaccatct agatgaatca catctgaaat gaccacttcc      120
aaagcctaag cactggcaca acagtttaaa gcctgattca gacattcgtt cccactcatc      180
tccaacggca taatgggaaa ctgtgtaggg gtcaaagcac gagtcacccg taggttggtt      240
caagccttcg ttgacagaag ttgccacagg taacaacctc tccccgaacc ttatgcctct      300

```

gctgggtcttt caagtgcctc cactatgatg ttgtagggtgg cacctctggt gaggacctcg 360
gcccgcacca cgct 374

<210> 184
<211> 375
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(375)
<223> n = A,T,C or G

<400> 184
agcgtggttt gcgcccgagg tcctcaccan aggtgccacc tacaacatca tagtggaggc 60
actgaaagac cagcagaggc ataagggttcg ggaagagggt gttaccgtgg gcaactctgt 120
caacgaaggc ttgaaccaac ctacggatga ctctgtcttt gaccctaca cagnttccca 180
ttatgccgtt ggagatgagt ggggaacgaat gtctgaatca ggcttttaaac tgttggtgcca 240
gtgcttange tttggaagtg gtcatttcag atgtgattca tctanatggt gtcattgacaa 300
tgggtngaac tacaagattg gagagaagtg gnaccgtcag ggganaaaat ggacctgccc 360
ggcgccgcncg ctgca 375

<210> 185
<211> 148
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(148)
<223> n = A,T,C or G

<400> 185
agcgtgggtcg cggcccgagg ctggcttnct gctcangtga ttatcctgaa ccatccaggc 60
caaataagcg cgggtatgc cctgnattg gattgccaca cggctcacat tgcattgcaag 120
tttgctgagc tgaaggaaaa gattgatc 148

<210> 186
<211> 397
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(397)
<223> n = A,T,C or G

<400> 186
tcgagcggcc gcccgggcag gtccaattga aacaaacagt tctgagaccg ttcttccacc 60
actgattaag agtggggngg cgggtattag ggataatatt catttagcct tctgagcttt 120
ctgggcagac ttggtgacct tgccagctcc agcagccttc tgggtccactg ctttgatgac 180

acccaccgca	actgtctgtc	tcatatcacg	aacagcaaag	cgacccaaag	gtggatagtc	240
tgagaagctc	tcaacacaca	tgggcttgcc	aggaaccata	tcaacaatgg	gcagcatcac	300
cagacttcaa	gaattttaagg	gccatcttcc	agctttttac	cagaacggcg	atcaatcttt	360
tccttcagct	cagcaaactt	gcatgcaatg	tgagccg			397

<210> 187

<211> 584

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(584)

<223> n = A,T,C or G

<400> 187

togagcggcc	gcccgggcag	gtccagaggg	ctgtgctgaa	gtttgctgct	gccactggag	60
ccactccaat	tgctggccgc	ttcactcctg	gaaccttcac	taaccagatc	caggcagcct	120
tccgggagcc	acggcttctt	gtggntactg	accccagggc	tgaccaccag	cctctcacgg	180
aggcattctta	tgttaaccta	cctaccattg	cgctgtgtaa	cacagattct	cctctgcgct	240
atgtggacat	tgccatccca	tgcaacaaca	agggagctca	ctcagngggg	tttgatgtgg	300
tggatgctgg	ctcgggaagt	tctgcgcatg	cgtggcacca	tttcccgtga	acacccatgg	360
gangncatgc	ctgatctgga	cttctacaga	gatcctgaag	agattgaaaa	agaagaacag	420
gctgnttgct	ganaaagcaa	gtgaccaagg	angaaatttc	angggtgaaa	nggactgctc	480
ccgctcctga	attcactgct	actcaacctg	angntgcaga	ctgggtcttg	aggngnacac	540
gggccctctg	ggcctattta	agcancttcg	gtcgcgaaca	cgnt		584

<210> 188

<211> 579

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(579)

<223> n = A,T,C or G

<400> 188

agcgtgngtc	gcggccgagg	tgctgaatag	gcacagaggg	cacctgtaca	ccttcagacc	60
agtctgcaac	ctcaggctga	gtagcagtga	actcaggagc	gggagcagtc	cattcacccct	120
gaaattctct	cttggncaact	gccttctcag	cagcagcctg	ctcttctttt	tcaatctctt	180
caggatctct	gtagaagtac	agatcaggca	tgacctccca	tgggtgttca	cgggaaatgg	240
tgccacgcat	gcgcagaact	tcccagacca	gcatccacca	catcaaacc	actgagtgag	300
ctcccttggt	gttgcatggg	atgggcaatg	tccacatagc	gcagaggaga	atctgtgtta	360
cacagcgcaa	tggtaggtag	gttaacataa	gatgcctccg	cgagaagctg	gtggtcagcc	420
ctgggggtcaa	gtaaccacaa	gaagccgtgg	ctcccgaag	gctgcctgga	tctggttagt	480
gaaggntcca	ggagtgaagc	ggccaacaat	tggagtggct	tcagtggcaa	gcagcaaact	540
tcagcacaag	ccctctggac	ctgcccggcg	gccgctoga			579

<210> 189

<211> 374

<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(374)
<223> n = A,T,C or G

<400> 189
tcgagcggcc gcccgggcag gtccattttc tccctgacgg ncccacttct ctccaatctt 60
gtagttcaca ccattgtcat ggcaccatct agatgaatca catctgaaat gaccacttcc 120
aaagcctaag cactggcaca acagttttaa gcctgattca gacattcgtt cccactcatc 180
tccaacggca taatgggaaa ctgtgtaggg gtcaaagcac gagtcacccg taggttggtt 240
caagccttcg ttgacagagt tgcccacggg aacaacctcn tccccgaacc ttatgcctct 300
gctgggcttt cagngcctcc actatgatgn tgtagggggg cacctctggn gangacctcg 360
gccgcgacca cgct 374

<210> 190
<211> 373
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(373)
<223> n = A,T,C or G

<400> 190
agcgtgggtcg cggccgaggt cctcaccaga ggtgccacct acaacatcat agtggaggca 60
ctgaaagacc agcagaggca taaggctcgg gaagagggtg ttaccgtggg caactctgtc 120
aacgaaggct tgaaccaacc tacggatgac tcgtgctttg acccctacac agtttcccat 180
tatgccgttg gagatgagtg ggaacgaatg tctgaatcag gctttaaact gttgtgccag 240
tgcttanget ttggaagtgg gtcatttcag atgtgattca tctagatggt gccatgacaa 300
tggngngaac tacaagattg gagagaagtg gnaccgncag ggagaaaatg gacctgcccg 360
ggcggccgct cga 373

<210> 191
<211> 354
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(354)
<223> n = A,T,C or G

<400> 191
agcgtgggtcg cggccgaggt ccacatcggc agggtcggag ccctggccgc catactcgaa 60
ctggaatcca tcggatcatgc tctcgccgaa ccagacatgc ctcttgctct tgggggttctt 120
gctgatgtac cagttcttct gggccacact gggctgagtg gggtagacgc aggtctcacc 180
agtctccatg ttgcagaaga ctttgatggc atccaggntg caaccttggt tgggggtcaat 240

ccagtactct ccactcttcc agccagagtg gcacatcttg aggtcacggc aggtgcggnc 300
 gggggnntttt gcggctgccc tctggncctc ggntgtntct natctgctgg ctca 354

<210> 192
 <211> 587
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(587)
 <223> n = A,T,C or G

<400> 192
 tcgagcggcc gcccgggcag gtctcgcggt cgcactgggt atgctgggtc tgttgggtccc 60
 cccggccctc ctggacctcc tggccccctt ggtcctccca gcgctgggtt cgacttcagc 120
 ttctgcccc agccacctca agagaaggct cagcatgggt gccgctacta ccgggctgat 180
 gatgccaatg tggttcgtga cctgacctc gaggtggaca ccacctcaa gagcctgagc 240
 cagcagatcg agaacatccg gagcccagag ggcagncgca agaaccctgc ccgcacctgc 300
 cgtgacctca agatgtgcca ctctgactgg aagagtggag agtactggat tgaccccaac 360
 caagctgcaa cctggatgcc atcaaagtct tctgcaacat ggagactggg gagacctgcg 420
 tgtacccac tcagcccagt gtggcccaaa agaactggta catcagcaag aaccccaagg 480
 acaagaagca tgtctgggtc ggcgagaaca tgaccgatgg attccagttc gagtatggcg 540
 ggcagggctc cgacctgcc gatggggacc ttggccgcga acacgct 587

<210> 193
 <211> 98
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(98)
 <223> n = A,T,C or G

<400> 193
 agcgtgggng cggccgaggt ataaatatcc agnccatctc ctccctccac acgctganag 60
 atgaagctgt ncaaagatct cagggtggan aaaaccat 98

<210> 194
 <211> 240
 <212> DNA
 <213> Homo sapien

<400> 194
 tcgagcggcc gcccgggcag gtccttcaga cttggactgt gtcacactgc caggcttcca 60
 gggctccaac ttgcagacgg cctgttggtg gacagtctct gtaatcgga aagcaaccat 120
 ggaagacctg ggggaaaaca ccatggtttt atccaccctg agatctttga acaacttcat 180
 ctctcagcgt gcggaggagg gctctggact ggatatttct acctcggccg cgaccacgct 240

<210> 195

<211> 400
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(400)
 <223> n = A,T,C or G

<400> 195
 cgagcgggcg accgggcagg tncagactcc aatccanana accatcaagc cagatgtcag 60
 aagctacacc atcacagggt tacaaccagg cactgactac aaganctacc tgcacacctt 120
 gaatgacaat gctcggagct cccctgtggt catcgacgcc tccactgcc ttgatgcacc 180
 atccaacctg cgttttcttg ccaccacacc caattccttg ctggtatcat ggcagccgcc 240
 acgtgccagg attaccggta catcatcnag tatganaagc ctgggcctcc tcccagagaa 300
 gnggtccctc ggccccgcc tgntgtccca naggntacta ttactgngcc ngcaaccggc 360
 aaccgatatc nattttgnca ttggccttca acaataatta 400

<210> 196
 <211> 494
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(494)
 <223> n = A,T,C or G

<400> 196
 agcgtgggtc ggcggccgang tcctgtcaga gtggcactgg tagaagttcc aggaaccctg 60
 aactgtaagg gttcttcac agngccaaca ggatgacatg aaatgatgta ctcagaagtg 120
 tcctggaatg gggcccatga gatgggtgtc tgagagagag cttcttgnc tgtctttttc 180
 cttccaatca ggggctcgt cttctgatta ttcttcagg caatgacata aattgtatat 240
 tcgggtcccg gntccaggcc agtaatatga ncctctgtga caccagggcg gngccgaggg 300
 accacttctc tgggaggaga cccaggcttc tcatacttga tgatgtaacc ggtaatcctg 360
 gcacgtggcg gctgccatga taccagcaag gaattggggg gtggtggcca ggaaacgcag 420
 gttggatggn gcatcaatgg cagtggaggc cgtcgatgac cacaggggga gctccgacat 480
 tgtcattcaa ggtg 494

<210> 197
 <211> 118
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(118)
 <223> n = A,T,C or G

<400> 197
 agcgtggncg cggccgaggt gcagcgcggt ctgtgccacc ttctgtctctc tgcccaacga 60

taaggagggt ncctgcccc aggagaacat taactntccc cagctcggcc tctgccgg 118

<210> 198

<211> 403

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(403)

<223> n = A,T,C or G

<400> 198

tcgagcggcc	gcccgggcag	gttttttttg	ctgaaagtgg	ntactttatt	ggntgggaaa	60
gggagaagct	gtggtcagcc	caagagggaa	tacagagncc	cgaaaaaggg	gagggcaggt	120
gggctggaac	cagacgcagg	gccaggcaga	aactttctct	cctcactgct	cagcctgggtg	180
gtggctggag	ctcanaaatt	gggagtgaca	caggacacct	tcccacagcc	attgcggcgg	240
catttcatct	ggccaggaca	ctggctgtcc	acctggcact	gggtcccaga	gaagcccagag	300
ctggggaaag	ttaatgttca	cctgggggca	ggaaccctcc	ttatcattgn	gcagagagca	360
gaaggtggca	cagcccgcgc	tgcacctcgg	ccgcgaccac	gct		403

<210> 199

<211> 167

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(167)

<223> n = A,T,C or G

<400> 199

tcgagcggcc	gcccgggcag	gtccaccata	agtcttgata	caaccacgga	tgagctgtca	60
ggagcaaggt	tgattttctt	cattgggtccg	gncttctcct	tgggggncac	ccgcactcga	120
tatccagtga	gctgaacatt	gggtggcgtc	cactgggcgc	tcaggct		167

<210> 200

<211> 252

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(252)

<223> n = A,T,C or G

<400> 200

tcgagcgggt	cgcccgggca	ggtccaccac	acccaattcc	ttgctgggtat	catggcagcc	60
gccacgtgcc	aggattaccg	gctacatcat	caagtatgag	aagcctgggt	ctcctcccag	120
agaagcggtc	cctcgcccc	gccctgggtg	cacagaggct	actattactg	gcctggaacc	180
gggaaccgaa	tatacaattt	atgtcattgn	cctgaagaat	aatcannaan	agcgancccc	240

tgattggaag ga

252

<210> 201

<211> 91

<212> DNA

<213> Homo sapien

<400> 201

agcgtggtcg	cggccgaggt	tgtacaagct	tttttttttt	tttttttttt	tttttttttt	60
tttttttttt	tttttttttt	tttttttttt	t			91

<210> 202

<211> 368

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(368)

<223> n = A,T,C or G

<400> 202

tcgagcggnc	gcccgggcag	gtctgccaac	accaagattg	gccccgcgcg	catccacaca	60
gtccgtgtgc	ggggaggtaa	caagaaatac	cgtgccctga	ggttggacgt	ggggaatttc	120
tcctggggct	cagagtgttg	tactcgtaaa	acaaggatca	tcgatgttgt	ctacaatgca	180
tctaataacg	agctggttcg	taccaagacc	ctggtgaaga	attgcatcgt	gctcatcgac	240
agcacaccgt	accgacagtg	gtacgagtc	cactatgcgc	tgcccctggg	ccgcaagaag	300
ggagccaagc	tgactcctga	ggaagaagag	attttaaaca	aaaaacgatc	taanaaaaaa	360
aaaacaat						368

<210> 203

<211> 340

<212> DNA

<213> Homo sapien

<400> 203

agcgtggtcg	cggccgaggt	gaaatggtat	tcagcttcct	ggcacttctg	gtcagcaacc	60
cagtgttggg	caacaaatga	tctttgagga	acatggtttt	aggcggacca	caccgcccac	120
aacggccacc	cccataaggc	ataggccaag	accatacccg	ccgaatgtag	gacaagaagc	180
tctctctcag	acaaccatct	catgggcccc	attccaggac	acttctgagt	acatcatttc	240
atgtcctcct	gttggcactg	atgaagaacc	cttacagttc	agggttcctg	gaacttctac	300
cagtgccact	ctgacaggac	ctgcccgggc	ggccgctcga			340

<210> 204

<211> 341

<212> DNA

<213> Homo sapien

<400> 204

tcgagcggcc	gcccgggcag	gtcctgtcag	agtggcactg	gtagaagttc	caggaaccct	60
gaactgtaag	ggttcttcat	cagtgccaac	aggatgacat	gaaatgatgt	actcagaagt	120

gtcggaccca	aagaacctgg	ngaanaaatg	gategnctca	tcgacaggac	accgtacccg	660
acaggggnac	gantcccact	atgcgcttgc	ccctggggccg	caanaaagga	aaactgcccg	720
ggcggccntc	gaaagcccaa	ttntggaaaa	aatccatcac	actgggnggc	cngtcgagca	780
tgcantana	ggggcccatt	ccccctnann				810

<210> 207

<211> 257

<212> DNA

<213> Homo sapien

<400> 207

tcgagcggcc	gcccgggcag	gtccccaacc	aaggctgcaa	cctggatgcc	atcaaagtct	60
tctgcaacat	ggagactggt	gagacctgcg	tgtacccac	tcagcccagt	gtggcccaga	120
agaactggta	catcagcaag	aaccccaagg	acaagaggca	tgtctggttc	ggcgagagca	180
tgaccgatgg	attccagttc	gagtatggcg	gccagggctc	cgaccctgcc	gatgtggacc	240
tcggccgcga	ccacgct					257

<210> 208

<211> 257

<212> DNA

<213> Homo sapien

<400> 208

agcgtggctg	cgcccgaggt	ccacatcggc	agggtcggag	ccctggccgc	catactcgaa	60
ctggaatcca	tcgggtcatgc	tctcgccgaa	ccagacatgc	ctcttgctct	tggggttctt	120
gctgatgtac	cagttcttct	gggccacact	gggctgagtg	gggtacacgc	aggtctcacc	180
agtctccatg	ttgcagaaga	ctttgatggc	atccagggtg	cagccttggt	tggggacctg	240
cccgggcggc	cgctcga					257

<210> 209

<211> 747

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(747)

<223> n = A,T,C or G

<400> 209

tcgagcggcc	gcccgggcag	gtccaccaca	cccaattcct	tgctgggtatc	atggcagccg	60
ccacgtgcc	ggattaccgg	ctacatcatc	aagtatgaga	agcctgggtc	tcctcccaga	120
gaagtgggtc	ctcggccccg	ccctgggtgc	acagaggcta	ctattactgg	cctggaaccg	180
ggaaccgaat	atacaattta	tgtcattgcc	ctgaagaata	atcagaagag	cgagcccctg	240
attggaagga	aaaagacaga	cgagcttccc	caactggtaa	cccttccaca	ccccaatctt	300
catggaccag	agatcttgga	tgttccttcc	acagttcaaa	agaccccttt	cgtcacccac	360
cctgggtatg	acactggaaa	tggtattcag	cttcctggca	cttctgggtca	gcaaccagct	420
gttgggcaac	aaatgatctt	tgaggaacat	ggnttttaggc	ggaccacacc	gccacaacg	480
gccaccccc	taaggcatag	gccaagacca	taccggccga	atgtaggaca	agaagctntn	540
tntcanacac	catntnatgg	gccccattcc	aggacacttc	tgagtacatc	atztatgnca	600
tctgtggcac	ttgatgaaaa	cccttacagt	tcagggttct	ggaactttta	ccaggcctnt	660


```
<220>
<221> misc_feature
<222> (1) ... (594)
<223> n = A,T,C or G
```

```
<210> 215
<211> 590
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(590)
<223> n = A,T,C or G
```

```
<210> 216
<211> 801
<212> DNA
<213> Homo sapien
```

```
<220>  
<221> misc_feature  
<222> (1)...(801)
```

<400> 216

<210> 217

<211> 349

<212> DNA

<213> Homo sapien

 $\langle 220 \rangle$

<221> misc feature

 $\langle 222 \rangle \quad (1) \dots (349)$

<223> n = A, T, C or G

<400> 217

agcgtggttn	gcggccgagg	tctggggccag	gggcaccaac	acgtcctctc	tcaccaggaa	60
gcccacgggc	tctgttttga	cctggagttc	cattttcacc	aggggcacca	ggttcaccct	120
tcacaccagg	agcacggggc	tgtecccttca	atccatncag	accattgtgn	cccctaattgc	180
ctttgaagcc	aggaagtcca	ggagttccag	ggaaaccacc	gagcaccctg	tgggtccaaca	240
actcctctct	caccaggteg	tccgggtttt	ccagggtgac	catcttcacc	agccttgcca	300
ggaggaccag	caggaccagc	gttaccaacc	tgcccgggcg	gccgctcga		349

<210> 218

<211> 372

<212> DNA

<213> Homo sapien

<400> 218

tcgagcggcc	gcccgggcag	gtccattttc	tccctgacgg	tcccactttct	ctccaatctt	60
gtagttcaca	ccattgtcat	ggcaccatct	agatgaatca	catctgaaat	gaccacttcc	120
aaagcctaag	cactggcaca	acagtttaaa	gcctgattca	gacattcggt	cccactcacc	180
tccaacggca	taatgggaaa	ctgtgtaggg	gtcaaagcac	gagtcattcg	taggttggtt	240
caagccttcg	ttgacagagt	tgccacgggt	aacaacctct	tcccgaaacct	tatgcctctg	300
ctggtctttc	agtgcctcca	ctatgatgtt	gtagggtggca	cctctggtga	ggacctcggc	360
cgcgaccacg	ct					372

<210> 219

tcttggcatt atgcacctcc acgccgtcca cgtaccagtt gaacttgacc tcaggggtctt 420
cgtgggtcac gtccaccacc acgcatgtaa cctcagacct cggccgcgac cacgct 476

<210> 222
<211> 477
<212> DNA
<213> Homo sapien

<400> 222
agcgtggtcg cggccgaggt ctgaggttac atgcgtggtg gtggacgtga gccacgaaga 60
ccctgaggtc aagttcaact ggtacgtgga cggcgtggag gtgcataatg ccaagacaaa 120
gccgcgggag gagcagtaca acagcacgta cegtgtgggc agcgtcctca ccgtcctgca 180
ccaggactgg ctgaatggca aggagtacaa gtgcaaggct tccaacaaaag cctccccagc 240
ccccatcgag aaaaccatct ccaaagccaa agggcaagcc ccgagaacca caggtgtaca 300
ccctgcccc atcccgagg gagatgacca agaaccaggt cagcctgacc tgcctgggtca 360
aaggcttcta tcccagcgac atcgccgtgg agtgggagag caatgggcag ccggagaaca 420
actacaagac cagcctccc gtgctggact ccgacacctg cccgggcggc cgctcga 477

<210> 223
<211> 361
<212> DNA
<213> Homo sapien

<400> 223
tcgagcggcc gcccgggcag gttgaatggc tcctcgtga ccaccccggt gctggtggtg 60
ggtacagagc tccgatgggt gaaaccattg acatagagac tgtccctgtc caggggtgtag 120
gggcccagct cagtgatgcc gtgggtcagc tggctcagct tccagtacag ccgtctctctg 180
tccagtccag ggcttttggg gtcaggacga tgggtgcaga cagcateccac tctggtggct 240
gccccatcct tctcaggcct gagcaaggct agtctgcaac cagagtacag agagctgaca 300
ctggtgttct tgaacaaggg cataagcaga cctgaagga cacctcggcc gcgaccacgc 360
t 361

<210> 224
<211> 361
<212> DNA
<213> Homo sapien

<400> 224
agcgtggtcg cggccgaggt gtccttcagg gtctgcttat gcccttggtc aagaacacca 60
gtgtcagctc tctgtactct ggttgacagc tgacctgtct caggcctgag aaggatgggg 120
cagccaccag agtggatgct gtctgcaccc atcgctctga ccccaaaagc cctggactgg 180
acagagagcg gctgtactgg aagctgagcc agctgaccca cggcatcact gagctggggc 240
cctacaccct ggacagggac agtctctatg tcaatggttt caccatcgg agctctgtac 300
ccaccaaccag caccgggggtg gtcagcgagg agccattcaa cctgcccggg cggccgctcg 360
a 361

<210> 225
<211> 766
<212> DNA
<213> Homo sapien

<223> n = A, T, C or G

agcgtggtcg	cggccgaggt	cctgtcagag	tggcactggt	agaagttcca	ggaaccctga	60
actgtaaggg	ttcttcatca	gtgccaacag	gatgacatga	aatgatgtac	tcagaagtgt	120
cctggaatgg	ggcccatgag	atggttgtct	gagagagagc	ttcttgtcct	acattcggcg	180
ggtatggtct	tggcctatgc	cttatggggg	tggccgttgt	gggcggtgtg	gtccgcctaa	240
aaccatgttc	ctcaaagatc	atgtgttgcc	caacactggg	ttgtgtacca	gaagtggcag	300
gaagctgaat	accattttcca	gtgtcatacc	cagggtgggt	gacgaaaggg	gtcttttgaa	360
ctgtggaagg	aacatccaag	atctctggtc	catgaagatt	ggggtgtgga	agggttacca	420
gttgggggaag	ctcgtctgtc	tttttccttc	caatcagggg	ctcgcctctc	tgattattct	480
tcagggcaat	gacataaatt	gtatatctcg	tcccggttcc	aggccagtaa	tagtagcctc	540
tgtgacacca	gggcggggcc	gagggacctt	tctnttgtaa	gagaccagct	tctcatactt	600
gatgatgagn	ccggtaatcc	tggcacgtgg	nggttgcatg	atnccaccaa	ggaaatnggn	660
gggggnggac	ctgcccggcg	gccgttcnaa	agcccaattc	cacacacttg	gnggccgtac	720
tatggatccc	actcngtcca	acttggngga	atatggcata	actttt		766

<213> Homo sapien

tcgagcgggcc	gcccgggcag	gtcctttgacc	ttttcagcaa	gtgggaaggt	gtaatccgtc	60
tccacagaca	aggccaggac	tcgtttgtac	ccgttgatga	tagaatgggg	tactgatgca	120
acagttgggt	agccaatctg	cagacagaca	ctggcaacat	tgcggacacc	ctccaggaag	180
cgagaatgca	gagtttcttc	tgtgatatca	agcacttcag	ggttgtagat	gctgccattg	240
tcgaacacct	gctgggatgac	cagcccaaag	gagaaggggg	agatgttgag	catgttcagc	300
agcgtggcct	cgctggctcc	cactttgtct	ccagtcttga	tcagacctcg	gccgcgacca	360
cgct						364

<213> Homo sapien

agcgtggtcg	cggcgcaggt	ctgtcctaca	gtcctcagga	ctctactccc	tacgcagcgt	60
ggtgaccgtg	ccctccagca	acttcggcac	ccagacctac	acctgcaacg	tagatcacia	120
gccagcaac	accaaggtgg	acaagagagt	tgagcccaaa	tcttgtagaca	aaactcacac	180
atgcccaccg	tgcccagcac	ctgaactcct	ggggggaccg	tcagtcttcc	tcttcccccg	240
catccccctt	ccaaacctgc	cggggcggcc	gtctcg			275

<213> Homo sapien

<400> 232

tcgagcggcc	gcccgggcag	gtccacatcg	gcagggtcgg	agccctggcc	gccatactcg	60
aactggaatc	catcggtcat	gctctcgccg	aaccagacat	gcctcttgtc	cttgggggttc	120
ttgctgatgt	accagttctt	ctggggccaca	ctgggctgag	tgggggtacac	gcaggtctca	180
ccagtctcca	tgttgacagaa	gactttgatg	gcatccaggt	tgcagccttg	gttgggggtca	240
atccagtact	ctccactctt	ccagtcagag	tggcacatct	tgaggtcacg	gcaggtgcgg	300
gcgggggttct	tgacctcggc	cgcgaccacg	ct			332

<210> 233

<211> 415

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(415)

<223> n = A,T,C or G

<400> 233

gtgggnttga	accnttttna	ntcccgcttg	gtaccgagct	cggatccact	agtaacggcc	60
gccagtgtgc	tggaattcgg	cttagcgtgg	tcgcggccga	ggtaagaac	cccggccgca	120
cctgccgtga	cctcaagatg	tgccactctg	actggaagag	tggagagtac	tggattgacc	180
ccaaccaagg	ctgcaacctg	gatgccatca	aagtcttctg	caacatggag	actggtgaga	240
cctgcgtgta	ccccactcag	cccagtgtgg	cccagaagaa	ctggtacatc	agcaagaacc	300
ccaaggacaa	gaggcatgtc	tggttcggcg	agagcatgac	cgatggattc	cagttcgagt	360
atggcggcca	gggctccgac	cctgccgatg	tggacctgcc	cgggcggccg	ctcga	415

<210> 234

<211> 776

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(776)

<223> n = A,T,C or G

<400> 234

agcgtggctg	cggccgaggt	ctgggatgct	cctgctgtca	cagtgagata	ttacaggatc	60
acttacggag	aaacaggagg	aaatagccct	gtccaggagt	tcactgtgcc	tgggagcaag	120
tctacagcta	ccatcagcgg	ccttaaacct	ggagttgatt	ataccatcac	tgtgtatgct	180
gtcactggcc	gtggagacag	ccccgcaagc	agcaagccaa	tttccattaa	ttaccgaaca	240
gaaattgaca	aaccatccca	gatgcaagtg	accgatgttc	aggacaacag	cattagtgtc	300
aagtggctgc	cttcaagttc	ccctgttact	ggttacagag	taaccaccac	tcccaaaaat	360
ggaccaggac	caacaaaaac	taaaactgca	ggtccagatc	aaacagaaat	gactattgaa	420
ggcttgacgc	ccacagtgga	gtatgtggtt	aagtgtctat	gtccagaate	caagcggaga	480
gaagtacgcc	tctgggttcag	actgnaagta	accaacattg	atcgctaaa	ggactggcat	540
tcactgatgn	ggatgccgat	tccatcaaaa	ttgnttgga	aaacccacag	gggcaagttt	600
ncangtcnag	gnngacctac	tcgagccctg	aggatggaat	ccttgactnt	tccttnnctt	660
gatggggaaa	aaaaaccttn	aaaacttgaa	ggacctgccc	gggcggccgt	ncaaaaccca	720

attccacccc cttgggggcg ttctatgggn cccactcgga ccaaacttgg ggtaan

776

<210> 235

<211> 805

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(805)

<223> n = A,T,C or G

<400> 235

tcgagcggcc	gcccgggag	gtccttgag	ctctgcagt	tcttcttcac	catcaggtgc	60
agggaaatagc	tcatggattc	catcctcagg	gctcgagtag	gtcaccctgt	acctggaaac	120
ttgcccctgt	gggctttccc	aagcaatttt	gatggaatcg	gcatccacat	cagtgaatgc	180
cagtccttta	gggcatcaa	tgttggttac	tgcagtctga	accagagget	gactctctcc	240
gcttggtatc	tgagcataga	cactaaccac	atactccact	gtgggctgca	agccttcaat	300
agtcattttc	gtttgatctg	gacctgcagt	tttagttttt	gttggtcctg	gtccattttt	360
gggagtgggtg	gttactctgt	aaccagtaac	aggggaactt	gaaggcagcc	acttgacact	420
aatgctgttg	tctgaacat	cggtcacttg	catctgggat	ggtttgtcaa	tttctgttcg	480
gtaattaatg	gaaattggct	tgctgcttgc	ggggcttgct	tccacggcca	gtgacagcat	540
acacagtgat	ggtataatca	actccagggt	taagccgctg	atggtagctg	aaactttgct	600
ccaggcacaa	gtgaactcct	gacagggcta	tttctnctg	ttctccgtaa	gtgatcctgt	660
aatatctcac	tgggacagca	ggangcattc	caaaacttcg	ggcngaccc	cctaagccga	720
attntgcaat	atncatcaca	ctggcgggag	ctcgancatt	cattaaaagg	cccaatcncc	780
cctataggga	gtntantaca	attng				805

<210> 236

<211> 262

<212> DNA

<213> Homo sapien

<400> 236

tcgagcggcc	gcccgggag	gtcacttttg	gtttttggct	atgttcggtt	ggtcaaagat	60
aaaaactaag	tttgagagat	gaatgcaaag	gaaaaaata	ttttccaaag	tccatgtgaa	120
attgtctccc	atTTTTTTTg	cttttgagg	ggttcagttt	gggttgcttg	tctgtttccg	180
ggttgggggg	aaagtTggtt	gggtgggagg	gagccagggt	gggatggagg	gagtttacag	240
gaagcagaca	gggccaacgt	cg				262

<210> 237

<211> 372

<212> DNA

<213> Homo sapien

<400> 237

agcgtgggtc	cggccgagg	cctcaccaga	ggtgccacct	acaacatcat	agtggaggca	60
ctgaaagacc	agcagaggca	taaggttcgg	gaagaggttg	ttaccgtggg	caactctgtc	120
aacgaaggct	tgaaccaacc	tacggatgac	tctgtctttg	accctacac	agtttcccat	180
tatgccgttg	gagatgagtg	ggaacgaatg	tctgaatcag	gctttaaact	gttgtgccag	240
tgcttaggct	ttggaagtgg	tcatttcaga	tgtgattcat	ctagatggtg	ccatgacaat	300

09636301.081000

ggtgtgaact acaagattgg agagaagtgg gaccgtcagg gagaaaatgg acctgcccgg 360
gcgcccgctc ga 372

<210> 238
<211> 372
<212> DNA
<213> Homo sapien

<400> 238
tcgagcggcc gcccgggcag gtccattttc tccctgacgg tcccacttct ctccaatctt 60
gtagtccaca ccattgtcat ggcaccatct agatgaatca catctgaaat gaccacttcc 120
aaagcctaag cactggcaca acagtttaaa gcctgattca gacattcgtt cccactcatc 180
tccaacggca taatgggaaa ctgtgtaggg gtcaaagcac gagtcacccg taggttggtt 240
caagccttcg ttgacagagt tgcccacggg aacaacctct tcccgaacct tatgcctctg 300
ctggtctttc agtgccctcca ctatgatgtt gtaggtggca cctctggtga ggacctcggc 360
cgcgaccacg ct 372

<210> 239
<211> 720
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(720)
<223> n = A,T,C or G

<400> 239
tcgagcggcc gcccgggcag gtccaccata agtcctgata caaccacgga tgagctgtca 60
ggagcaaggt tgattttctt cattgggtccg gtctttctct tgggggtcac ccgcaactca 120
tatecagtga gctgaacatt ggggtggtgc cactgggcgc tcaggcttgt ggggtgtgacc 180
tgagtgaact tcaggtcagt tgggtgcagga atagtgggta ctgcagtctg aaccagagggc 240
tgactctctc cgcttggtatt ctgagcatag acactaacca catactccac tgtgggctgc 300
aagccttcaa tagtcatttc tgtttgatct ggacctgcag ttttagtttt tgttggctct 360
gggtccatttt tgggagtggg gggtactctg taaccagtaa caggggaact tgaaggcagc 420
cacttgacac taatgctggt gtctgaaca tcgggtcactt gcatctggga tggtttgnc 480
atttctgttc ggtaattaat ggaaattggc ttgctgcttg cggggctgtc tccacggcca 540
gtgacagcat acacagngat ggnatnatca actccaagtt taaggccctg atggtaactt 600
taaacttgct ccagccagn gaacttccgg acaggggtatt tcttctgggt tccgaaagn 660
gancctggaa tnntctcctt ggancagaag gancntccaa aacttggggc ggaaccctt 720

<210> 240
<211> 691
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(691)
<223> n = A,T,C or G

<400> 240

```

agcgtgggtcg cggccgaggt cctgtcagag tggcactggg agaagttcca ggaaccctga      60
actgtaaggg ttcttcatca gtgccaacag gatgacatga aatgatgtac tcagaagtgt      120
cctggaatgg ggcccatgag atggttgtct gagagagagc ttcttgcct acattcggcg      180
ggtatggtct tggcctatgc cttatggggg tggccgttgt gggcgggtgtg gtccgcctaa      240
aaccatgttc ctcaaagatc atttgttgcc caacactggg ttgctgacca gaagtgccag      300
gaagctgaat accatttcca gtgtcatacc caggggtggg gacgaaaggg gtcttttgaa      360
ctgtggaagg aacatccaag atctctggtc catgaagatt ggggtgtgga agggttacca      420
gttggggaag ctctgtctgtc ttttccctc caatcagggg ctctctcttc tgattattct      480
tcagggcaat gacataaatt gtatattcgg tttcccggtc caggccagta atagtagcct      540
cttgtgacac caggcggggc ccanggacca cttctctggg angagacca gcttctcata      600
cttgatgatg taaccgggta atcctgcacg tggcggctgn catgatacca ncaaggaatt      660
gggtgngngn gacctgcccg gcggccctcn a                                     691

```

<210> 241

<211> 808

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(808)

<223> n = A,T,C or G

<400> 241

```

agcgtgggtcg cggccgaggt ctgggatgct cctgctgtca cagttagata ttacaggatc      60
acttacggag aaacaggagg aaatagccct gtccaggagt tcaactgtgcc tgggagcaag      120
tctacagcta ccatcagcgg ccttaaacct ggagttgatt ataccatcac tgtgtatgct      180
gtcactggcc gtggagacag ccccgcaagc agcaagccaa tttccattaa ttaccgaaca      240
gaaattgaca aaccatccca gatgcaagtg accgatgttc aggacaacag cattagtgtc      300
aagtggctgc cttcaagttc ccctgttact ggttacagag taaccaccac tccccaaaaat      360
ggaccaggac caacaaaaac taaaactgca ggtccagatc aaacagaaat gactattgaa      420
ggcttgcagc ccacagtgga gtatgtggtt agtgtctatg ctcagaatcc aagcggagag      480
agtcagcctc tggttcagac tgcagtaacc actattcctg caccaactga cctgaagtgc      540
actcaggtca caccacaag cctgagccgc cagtggacac caccatgt tcaactactg      600
gatatcgagt gcgggtgacc cccaaggaga agaccgggac ccatgaaaga aatcaacctt      660
gtcctgaca gtcctccgn ggggtgatca ggacttatgg gggactgcc cggcngggcg      720
ntcgaaancg aattntgaaa tttccttcnc actgggnggc gnttcgagct tncctntana      780
nggcccatt cncctntagn gggtcgtg                                     808

```

<210> 242

<211> 26

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(26)

<223> n = A,T,C or G

<400> 242

agcgtggtcg cggccgaggt cnagga

26

<210> 243
 <211> 697
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(697)
 <223> n = A,T,C or G

<400> 243
 tcgagcggcc gcccgggcag gtccaccaca cccaattcct tgctggtatc atggcagccg 60
 ccacgtgccg ggattaccgg ctacatcatc aagtatgaga agcctgggtc tcctcccaga 120
 gaagtgggtc ctcggccccg ccctggtgtc acagaggcta ctattactgg cctggaaccg 180
 ggaaccgaat atacaattta tgtcattgcc ctgaagaata atcagaagag cgagcccctg 240
 attggaagga aaaagacaga cgagcttccc caactggtaa cccttcacac cccaatctt 300
 catggaccag agatcttgga tgttccttcc acagttcaaa agaccccttt cgtcaccac 360
 cctgggtatg acactggaaa tgggtattcag ctctctggca cttctggtca gcaaccacg 420
 gttgggcaac aaatgatctt tgaggaacat ggttttaggc ggaccacacc gccacaacg 480
 ggcaccccca taaggnatag gccaagacca taccgcgcg aatgtaggac aagaagctct 540
 ntctcaacaa ccattctcat ggcacccatt caggacactt ctgagtacat catttcatgt 600
 catcctggtg ggcacttgat gaanaacct tacagttcag ggttcctgga acttctacca 660
 gngccacttc tgacagganc ttgggcgnga ccacct 697

<210> 244
 <211> 373
 <212> DNA
 <213> Homo sapien

<400> 244
 agcgtggtcg cggccgaggt ccattttctc cctgacggtc ccactttctt ccaattctgt 60
 agttcacacc attgtcatgg caccatctag atgaatcaca tctgaaatga ccacttccaa 120
 agcctaagca ctggcacaac agtttaaagc ctgattcaga cattcggttc cactcatctc 180
 caacggcata atgggaaact gtgtaggggt caaagcacga gtcacccgta ggttggttca 240
 agccttcggt gacagagttg cccacggtaa caacctctt ccgaacctta tgctctgct 300
 ggtctttcag tgctccact atgatgttg aggtggcacc tctggtgagg acctgcccg 360
 gcggcccgct cga 373

<210> 245
 <211> 307
 <212> DNA
 <213> Homo sapien

<400> 245
 agcgtggtcg cggccgaggt gtgccccaga ccaggaattc ggcttcgacg ttggccctgt 60
 ctgcttcctg taaactccct ccattcccaac ctggctccct cccacccaac caactttccc 120
 cccaacccgg aaacagacaa gcaacccaaa ctgaaccccc tcaaaagcca aaaaaatggg 180
 agacaatttc acatggactt tggaaaatat ttttttctt tgcattcatc tctcaaaact 240
 agttttttatc tttgaccaac cgaacatgac caaaaaccaa aagtgacctg cccgggcggc 300

cgctcga

307

<210> 246
 <211> 372
 <212> DNA
 <213> Homo sapien

<400> 246

tcgagcggcc	gcccgggcag	gtcctcacca	gaggtgccac	ctacaacatc	atagtggagg	60
cactgaaaga	ccagcagagg	cataaggttc	gggaagaggt	tgttaccgtg	ggcaactctg	120
tcaacgaagg	cttgaaccaa	cctacggatg	actcgtgctt	tgacccctac	acagtttccc	180
attatgccgt	tggagatgag	tgggaacgaa	tgtctgaatc	aggctttaaa	ctgttggtgcc	240
agtgcctagg	ctttggaagt	ggtcatttca	gatgtgattc	atctagatgg	tgccatgaca	300
atgggtgtgaa	ctacaagatt	ggagagaagt	gggaccgtca	gggagaaaat	ggacctcggc	360
cgcgaccacg	ct					372

<210> 247
 <211> 348
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(348)
 <223> n = A,T,C or G

<400> 247

tcgagcggcc	gcccgggcag	gtaccgggggt	ggtcagcgag	gagccattca	cactgaactt	60
caccatcaac	aacctgcggt	atgaggagaa	catgcagcac	cctggctcca	ggaagttcaa	120
caccacggag	agggctcctt	agggcctgct	caggctccctg	ttcaagagca	ccagtgttgg	180
ccctctgtac	tctggctgca	gactgacttt	gtcagacct	gagaaacatg	gggcagccac	240
tggagtggac	gccatctgca	ccctccgcct	tgatcccact	ggtinctggac	tggacanana	300
gcggctatac	ttgggagctg	anccnaacct	ttggcgngga	cncncctt		348

<210> 248
 <211> 304
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(304)
 <223> n = A,T,C or G

<400> 248

gaggactggc	tcagctccca	gtatagccgc	tctctgtcca	gtccaggacc	agtgggatca	60
aggcggagg	tgcagatggc	gtccactcca	gtggctgccc	catgtttctc	aagtctgagc	120
aaagncagtc	tgcagccaga	gtacagaggg	ccaacactgg	tgctcttgaa	cagggacctg	180
agcaggccct	gaaggaccct	ctccgtgggt	ttgaacttcc	tggagccagg	gtgctgcatg	240
ttctcctcat	accgcaggtt	gttgatgggt	aagttcagtg	tgaatggctc	ctcgtgacc	300
accc						304

09635304.031000


```

gaccatggtg ctactgggtc cttctgagtc agatatgtga ctgatgngaa ctgaagtagg      120
tactgtagat ggtgaagtct ggggtgtccct aaatgctgca tctccagagc cttccatcat      180
taccgtttct tcttttgcta tgggatgaga cactgttgag tattctctaa agtcaccact      240
gaaatcttcc tccaaaggaa aacctgtgga aaagcccctt atttctgccc cataatttgg      300
ttctccta at cncctctgaaa tcaactatttc cctggaangt ttgggaaaaa nngggcnacc      360
tgncantgga aantggatan aaagatccca ccattttacc caacnagcag aaagtgggaa      420
nggtaccgaa aagctccaag taanaaaaag gagggaaagta aaggtcaagt gggcaccagt      480
ttcaaacaaa actttcccca aactatanaa ccca                                     514

```

<210> 252

<211> 501

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(501)

<223> n = A,T,C or G

<400> 252

```

aagcggccgc ccgggcaggn ncagnagtgc cttcgggact gggntcaccc ccaggtctgc      60
ggcagttgtc acagcgccag ccccgctggc ctccaaagca tgtgcaggag caaatggcac      120
cgagatattc cttctgccac tgttctccta cgtgggtatgt cttcccatca tcgtaacacg      180
ttgcctcatg agggtcacac ttgaattctc cttttccggt cccaagacat gtgcagctca      240
tttggctggc tctatagttt ggggaaagt ttgtgaaact gtgccactga cttttacttc      300
ctccttctct actggagctt tccgtacctt ccacttctgc tgntggnaaa aaggngngaa      360
cntcttatca atttcattgg acagtanccc nctttctncc caaaacatnc aagggaaaat      420
attgattncn agagcggatt aaggaacaac ccnaattatg ggggccagaa ataaaggggg      480
cttttccaca ggtnttttcc t                                     501

```

<210> 253

<211> 226

<212> DNA

<213> Homo sapien

<400> 253

```

tcgagcggcc gcccgggcag gtctgcaggc tattgtaagt gttctgagca catatgagat      60
aacctgggccc aagctatgat gttcgatacg ttaggtgtat taaatgcaact tttgactgcc      120
atctcagtgg atgacagcct tctcactgac agcagagatc ttctcactg tgccagtggg      180
caggagaaaag agcatgctgc gactggacct cggccgcgac cacgct                                     226

```

<210> 254

<211> 226

<212> DNA

<213> Homo sapien

<400> 254

```

agcgtggtcg cggccgaggt ccagtcgcag catgctcttt ctctgcecca ctggcacagt      60
gaggaagatc tctgctgtca gtgagaaggc tgtcatccac tgagatggca gtcaaaagtg      120
catttaatac acctaacgta tcgaacatca tagcttggcc cagggttatct catatgtgct      180
cagaacactt acaatagcct gcagacctgc cggggcggcc gctcga                                     226

```


actaatgctg gtggcctgaa catcggtcac ttgcattctg gatgggttgg tcaatttctg 480
 ttcggttaatt aatgggaaat tggcttactg gcttgccggg gctgtctcca cggncagtga 540
 caagcataca caggngatgg gtataatcaa ctccaggttt aaggccnctg atggta 596

<210> 266
 <211> 506
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(506)
 <223> n = A,T,C or G

<400> 266
 agcgtggctg cggccgaggt ctgggatgct cctgctgtca cagtgaagata ttacaggatc 60
 acttacggag aaacaggagg aaatagccct gtccaggagt tctactgtgcc tgggagcaag 120
 tctacagcta ccatcagcgg ccttaaacct ggagttgatt ataccatcac tgtgtatgct 180
 gtcactggcc gtggagacag ccccgcaagc agtaagccaa tttccattaa ttaccgaaca 240
 gaaattgaca aaccatccca gatgcaagt accgatgttc aggacaacag cattagtgtc 300
 aagtggctgc cttcaagttc ccctgttact ggttacagag taaccaccac tccccaaaat 360
 gggaccagga ccaacaaaaa actaaaactg canggtccag atcaaacaga aatgactatt 420
 gaaggcttgc agcccacagt ggagtatgtg ggtagtgtc tatgtctcaga atnccaagcg 480
 gagagagtca gcctctgggt cagact 506

<210> 267
 <211> 548
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(548)
 <223> n = A,T,C or G

<400> 267
 tcgagcggcc gcccgggcag gtcagcgctc tcaggacgtc accaccatgg cctgggctct 60
 gctcctcctc accctcctca ctcagggcac agggctcctg gccagctctg ccctgactca 120
 gcctccctcc gcgtccgggt ctcttgaca gtcagtcacc atctcctgca ctggaaccag 180
 cagtacgtt ggtgcttatg aatttgtctc ctggtacca caacaccag gcaaggcccc 240
 caaactcatg atttctgagg tactaagcg gccctcagg gtccttgatc gcttctctgg 300
 ctccaagtct ggcaacacgg cctccctgac cgtctctggg ctccangctg aggatganc 360
 tgattattac tgggaagctc tatgcaggca acaacaattg ggtgttcggc ggaaggacc 420
 aagctgaccg tnctaaggct aagcccaagg cttgcccccc tcggctcactc tgttcccacc 480
 ctctctgaa gaagctttca agccaacaan gncacactgg gtgtgtctca taagtggact 540
 ttctacc 548

<210> 268
 <211> 584
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(584)
 <223> n = A,T,C or G

<400> 268
 agcgtgggtcg cggccgaggt ctgtagcttc tgtgggactt ccactgctca ggcgtcaggc 60
 tcaggtagct gctggccgog tacttggtgt tgctttgntt ggaggggtgtg gtgggtctcca 120
 ctcccgcctt gacggggctg ctatctgcct tccaggccac tgtcacggct cccgggtaga 180
 agtcacttat gagacacacc agtgtggcct tgttggcttg aagctcctca gaggaggggtg 240
 ggaacagagt gaccgagggg gcagccttgg gctgacctag gacggtcagc ttgggtccctc 300
 cgccgaacac ccaattgttg ttgcctgcat atgagctgca gtaataatca gcctcatcct 360
 cagcctggag cccagagacn gtcaagggag gcccggtgtt gcccaagactt ggaagccaga 420
 naagcgatca gggacccctg agggccgctt tacngacctc aaaaaatcat gaatttgggg 480
 ggcttttgcc tggnggttgg ttggtnacca gnaaaacaaa atttcataaa gcaccaacgt 540
 cactgctggt ttccagtga ngaanatggt gaactgaant gtcc 584

<210> 269
 <211> 368
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(368)
 <223> n = A,T,C or G

<400> 269
 agcgtgggtcg cggccgaggt ccagcatcag gagccccgcc ttgccggctc tggtcategc 60
 ctttcttttt gtggcctgaa acgatgtcat caattcgtag tagcagaact gccgtctcca 120
 ctgctgtctt ataagtctgc agcttcacag ccaatggctc ccatatgcc agttccttca 180
 tgtccaccaa agtaccgctc tcaccattta cccccaggt ctcacagttc tcttgggtgt 240
 gcttggcccg aaggaggta agtanacgga tgggtgctggt cccacagttc tggatcaggg 300
 tacgaggaat gacctctagg gcctgggna caagccctgt atggacctgc cggggcgggc 360
 ccgctcga 368

<210> 270
 <211> 368
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(368)
 <223> n = A,T,C or G

<400> 270
 tcgagcggcc gcccgggcag gtccatacag ggctgttgcc caggccctag aggn cattcc 60
 ttgtaccctg atccagaact gtgggaccag caccatccgt ctacttacct cccttcgggc 120
 caagcacacc caggagaact gtgagacctg ggggtgtaa at gngagacgg gtactttgtt 180

ggacatgaag gaactgggca tatgggagcc attggctgng aagctgcana cttataagac 240
 agcagtggag acggcagttc tgctactgcg aattgatgac atcgtttcag gccacaaaaa 300
 gaaaggcgat gaccanagcc ggcaaggcgg ggcttctctga tgctggacct cggccgccga 360
 ccacgctt 368

<210> 271
 <211> 424
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(424)
 <223> n = A,T,C or G

<400> 271
 agcgtggtcg cggccgaggt ccactagagg tctgtgtgcc attgccagc cagagtctct 60
 gcgttacaaa ctctaggag ggcttgctgt gcggagggcc tgctatggtg tgctgcggtt 120
 catcatggag agtggggcca aaggctgcga ggttggtggtg tctgggaaac tccgaggaca 180
 gagggctaaa tccatgaagt ttgtggatgg cctgatgac caccagcgag accctgttaa 240
 ctactacgtt gacactgctg tgcgccacgt gttgctcana caggggtgtg tgggcatcaa 300
 ggtgaagatc atgctgccct gggacccanc tggcaaaaat ggcccttaaa aacccttgc 360
 cntgaccacg tgaaccattt gtngaaccc caagatgaan atacttgccc accaccccc 420
 attc 424

<210> 272
 <211> 541
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(541)
 <223> n = A,T,C or G

<400> 272
 tcgagcggcc gcccgggcag gtctgccaag gagaccctgt tatgctgtgg ggactggctg 60
 gggcatggca ggcggtctct gcttcccacc cttctgttct gagatggggg tgggtggcag 120
 tatctcatct ttgggttcca caatgctcac gtgggtcaggc aggggcttct tagggccaat 180
 cttaccagtt ggggtcccag gcagcatgat cttcaccttg atgccagca caccctgtct 240
 gagcaacacg tggcgcacag cagtgtcaac gtagtagtta acaggggtctc cgctgtggat 300
 catcaggcca tccacaaact tcatggattt agccctctgt cctcggagtt tcccaaaaca 360
 ccacaacctc gccagccttt gggccccact tcttcatgaa tgaaaccgca gcacaccatt 420
 ancaaggccc ttccgcacag gnaagccctt cctaaggagt tttgtaaacy caaaaaactc 480
 ttgcctgggg caaatgggca cacagacctn tantnggacc ttggnccgcy aaccaccgct 540
 t 541

<210> 273
 <211> 579
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(579)
 <223> n = A,T,C or G

<400> 273
 agcgtggtcg cggccgaggt ctggccctcc tggcaaggct ggtgaagatg gtcaccctgg 60
 aaaacccgga cgacctggtg agagaggagt tgttggacca caggggtgctc gtggtttccc 120
 tggaactcct ggacttcctg gottcaaagg cattagggga cacaatggtc tggatggatt 180
 gaagggacag cccggtgctc ctggtgtgaa ggggtgaacct ggngcccctg gtgaaaatgg 240
 aactccaggt caaacaggag cccgngggct tcttgngag agaggacgtg ttggtgcccc 300
 tggcccanac ctgcccgggc ggccgctcna aaagccgaaa tccagnacac tggcggccgn 360
 tactantgga atccgaactt cgggtacaaa gcttggccgt aatcatggcc atagcttgtt 420
 ccctggggng gaaattggta ttccgctncc aattccacac aacataccga acccgaaag 480
 cattaagtg taaaagccct gggggggcct aaatgangtg agcntaactc ncatttaatt 540
 ggcgttgccg ttcactgccc cgcttttcca gtccgggna 579

<210> 274
 <211> 330
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(330)
 <223> n = A,T,C or G

<400> 274
 tcgagcggcc gcccgggcag gtctgggcca ggggcaccaa cacgtcctct ctcaccagga 60
 agcccacggg ctctgtttg acctggagtt ccattttcac caggggcacc aggttcaccc 120
 ttcacaccag gagcacggg ctgtcccttc aatccatcca gaccattgtg ncccctaattg 180
 cctttgaagc caggaagtcc aggagttcca gggaaaccac gagcaccctg tggccaaca 240
 actcctctct caccaggtcg tccgggtttt ccagggtgac catcttcacc agccttgcca 300
 ggagggccag acctcggccg cgaccacgct 330

<210> 275
 <211> 97
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(97)
 <223> n = A,T,C or G

<400> 275
 ancgtggtcg cggccgaggt cctcaccaga ggtgncacct acaacatcat agtggaggca 60
 ctgaaagacc ancagaggca taaggttcgg gaagagg 97

<210> 276

<211> 610
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(610)
 <223> n = A,T,C or G

<400> 276
 tcgagcggcc gcccgggcag gtccattttc tccctgacgg tcccacttct ctccaatctt 60
 gtagttcaca ccattgtcat ggcaccatct agatgaatca catctgaaat gaccacttcc 120
 aaagcctaag cactggcaca acagttttaa gcctgattca gacattcgtt cccactcatc 180
 tccaacggca taatgggaaa ctgtgtaggg gtcaaagcac gagtcacccg taggttggtt 240
 caagccttcg ttgacagagt tgtccacggg aacaacctct tcccgaaacct tatgcctctg 300
 ctggtctttc agtgcctcca ctatgatgtt gtaggtggca cctctggtga ggacctcngn 360
 ccngaacaac gcttaagccc gnattctgca gaataatccc atcacacttg gcggccgctt 420
 cgancatgca tcntaaaagg ggccccaatt tcccccttat aagngaanc cgtatttncca 480
 atttcaactgg ncccgccgnt ttacaaaacg ncgggtgaact ggggaaaaaac cctggcggtt 540
 acccaacttt aatcgccntt ggcagcacia tcccccttt tcgnccancn tgggcgtaaa 600
 taaccgaaaa 610

<210> 277
 <211> 38
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(38)
 <223> n = A,T,C or G

<400> 277
 ancngngtcg cggccganct nttttttctt nttttttt 38

<210> 278
 <211> 443
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(443)
 <223> n = A,T,C or G

<400> 278
 agcgtggtcg cggccgaggt ctgaggttac atgcgtgggt gtggacgtga gccacgaaga 60
 ccctgaggtc aagttcaact ggtacgtgga cggcgtggag gtgcataatg ccaagacaaa 120
 gccgcgggag gagcagtaca acagcacgta cgggngggtc agcgtcctca ccgtcctgca 180
 ccagaattgg ttgaatggca aggagtacaa gngcaagggt tccaacaaag cctccccagc 240
 cccntcga aaaccattt ccaaagccaa agggcagccc cgagaaccac aggtgtacac 300

<222> (1)...(331)

<223> n = A,T,C or G

<400> 284

tcgagcggcc	gcccgggcag	gtctgggtggg	gtcctggcac	acgcacatgg	ggngttgnt	60
ctnatccagc	tgcccagccc	ccattggcga	gtttgagaag	gtgtgcagca	atgacaacaa	120
naccttcgac	tcttcctgcc	acttccttgc	cacaaagtgc	accctggagg	gcaccaagaa	180
gggccacaag	ctccacctgg	actacatcgg	gccttgcaaa	tacatcccc	cttgctgga	240
ctctgagctg	accgaattcc	cccttgcgca	tgcgggactg	gctcaagaac	cgctcctggca	300
cccttgatatg	anagggatga	agacacnacc	c			331

<210> 285

<211> 509

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(509)

<223> n = A,T,C or G

<400> 285

agcgtggctg	cgcccgagggt	ctgtcctaca	gtcctcagga	ctctactccc	tcagcagcgt	60
ggtgaccgtg	ccctccagca	acttcggcac	ccagacctac	acctgcaacg	tagatcacaa	120
gcccagcaac	accaagggtg	acaagagagt	tgagcccaaa	tcttgtgaca	aaactcacac	180
atgcccaccg	tgcccagcac	ctgaactcct	ggggggaccg	tcagtcttcc	tcttcccccg	240
catccccctt	ccaaacctgc	ccgggcggcc	gctcgaaagc	cgaattccag	cacactggcg	300
gccggtacta	gtgganccna	acttggnanc	caacctggng	gaantaatgg	gcataanctg	360
tttctggggg	gaaattggta	tccngtttac	aattcccnca	caacatacga	gccggaagca	420
taaaagngta	aaagcctggg	ggnggcctan	tgaagtgaag	ctaaactcac	attaattngc	480
gttgccgctc	actggcccg	ttttccagc				509

<210> 286

<211> 336

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(336)

<223> n = A,T,C or G

<400> 286

tcgagcggcc	gcccgggcag	gtttggaagg	gggatgcggg	ggaagaggaa	gactgacggt	60
ccccccagga	gttcagggtg	tgggcacggg	gggcatgtgt	gagttttgtc	acaagatttg	120
ggtcaactc	tcttgccac	cttggtgttg	ctgggcttgt	gatctacgtt	gcagggtgtag	180
gtctggngc	cgaagttgct	ggagggcacg	gtcaccacgc	tgctgaggga	gtagagtcct	240
gaggactgta	ngacagacct	cggccgngac	cacgctaagc	cgaattctgc	agatatccat	300
cacactggcg	gccgctccga	gcatgcattt	tagagg			336

<210> 287

<212> DNA

<213> Homo sapien

<400> 293

```
agcgtgggtcg cggccgaggt tgtacaagct tttttttttt tttttttttt tttttttttt    60
tttttttttt tttttttttt tttttttttt tttttttttt t
```

101

<210> 294

<211> 285

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(285)

<223> n = A,T,C or G

<400> 294

```
tcgagcggcc gcccgggcag gtctgccaac accaagattg gcccccgccg catccacaca    60
gttngtgtgc ggggaggtaa caagaaatac cgtgccttga ggntggacgn ggggaatttc    120
tcctggggct cagagtgttg tactcgtaaa acaaggatca tcgatgttgt ctacaatgca    180
tctaataacg agctggttcg taccaagacc ctggtgaaga attgcatcgt gctcatngac    240
agcacaccgt accgacagtg ggtaccgaag tcccactatg cncct
```

285

<210> 295

<211> 216

<212> DNA

<213> Homo sapien

<400> 295

```
tcgagcggcc gcccgggcag gtccaccaca cccaattcct tgctgggtatc atggcagccg    60
ccacgtgccg ggattaccgg ctacatcatc aagtatgaga agcctgggtc tcctcccaga    120
gaagtgggtc ctcgggccccg ccttgggtgtc acagaggcta ctattactgg cctggaaccg    180
ggaaccgaat atacaattta tgtcattgcc ctgaag
```

216

<210> 296

<211> 414

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(414)

<223> n = A,T,C or G

<400> 296

```
agcgtgntcn cggccgagga tggggaagct cgncgtgtctt tttccttcca atcaggggct    60
nnntcttctg attattcttc agggcaanga cataaattgt atattcggnt cccggttcca    120
gnccagtaat agtagcctct gtgacaccag ggccggggccg agggaccact tctctgggag    180
gagaccaggy cttctcatac ttgatgatga agccggtaat cctggcacgt gggcggctgc    240
catgatacca ccaangaatt ggggtgtggtg gacctgcccg ggccggggccg tcgaaaancc    300
```

gaattcntgc aagaatatcc atcacacttg ggcggggccgn tcgaaccatg catcntaaaa 360
gggcccgaat ttcccccccta ttagngngaag ccncattttaa caaattccac ttgg 414

<210> 297
<211> 376
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(376)
<223> n = A,T,C or G

<400> 297
tcgagcggcc gcccgggcag gtctcgcggt cgcactgggtg atgctgggtcc tgttgggtccc 60
cccgccctc ctggacctcc tgggtccccc ggtcctccca gcgctgggtt cgacttcagc 120
ttctgcccc agccacctca agagaaggct cagcatgggtg gccgctacta ccgggctgat 180
gatgccaatg tggttcgtga ccgtgacctc gaggtggaca ccacctcaa gagccttgag 240
ccagcagaat cgaaaacatt cggaacccaa gaagggcaag cccgcaaaga aaccccgccc 300
gcacctggcc gngaacctcc aagaangtgc ccacntcttg actgggaaaa aaagggaaaa 360
ntacttgga ttggac 376

<210> 298
<211> 357
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(357)
<223> n = A,T,C or G

<400> 298
agcgtgggtcg cggccgaggt ccacatcggc aggggtcggag ccctggccgc catactcgaa 60
ctggaatcca tcggtcatgc tctcgccgaa ccagacatgc ctcttgctct tggggttctt 120
gctgatgtac cagttcttct gggccacact gggctgagtg gggtagacgc aggtctcacc 180
agtctccatg ttgcagaaga ctttgatggc atccagggtg cagccttggg tggggccaat 240
ccagtactct ccactcttcc agtcagaagt ggcacatctt gaggtcacgg caggggtgcgg 300
gcgggggttct tgcgggctgc cttcttgggc tcccgggaatg ttctnngaac ttgctgg 357

<210> 299
<211> 307
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(307)
<223> n = A,T,C or G

<400> 299

agcgtgggtcg	cgcccgaggt	ccacatcggc	agggtcggag	ccttggccgc	catactcgaa	60
ctggaatcca	tcggtcatgc	tctcgccgaa	ccagacatgc	ctcttgtcct	tggggttcct	120
gctgatgtac	cagttcttct	gggccacact	gggctgagtg	gggtacaccg	caggtctcac	180
cagtctccat	gttgacagaag	actttgatgg	catccagggt	gcagccttgg	ttgggggtcaa	240
tccagtactc	tccactcttc	cagtcagaag	tgggcacatc	ttgaggtcac	cggcaggtgc	300
cgggccgggg	gttcttgcgg	cttgccctct	gggctcggga	tgttctcgat	ctgcttggct	360
caggctcttg	agggtgggtg	tccacctcga	ggtcacggtc	accgaaacct	gcccggggcgg	420
cccgtctga						429

<210> 310

<211> 430

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (430)

<223> n = A,T,C or G

<400> 310

tcgagcggtc	gcccgggcag	gtttcgtgac	cgtgacctcg	agggtggacac	caccctcaag	60
agcctgagcc	agcagatcga	gaacatccgg	agcccagagg	gcagccgcaa	gaaccccgcc	120
cgcacctgcc	gtgacctcaa	gatgtgccac	tctgactgga	agagtggaga	gtactggatt	180
gaccccaacc	aaggtgcaa	cctggatgcc	atcaaagtct	tctgcaacat	ggagactggg	240
gagacctgcg	tgtacccccc	tcagcccagt	gtggggccag	aagaaactgg	tacatcagca	300
aggaaaccca	aggacaagag	gcattgtctt	ggttcggcga	gnagcatgac	ccgatggatt	360
ccagtttcga	gtattggcgg	ccagggcttc	ccgaccttgc	ccgatgtgga	cctcggccgc	420
gaccaccgct						430

<210> 311

<211> 2996

<212> DNA

<213> Homo sapien

<400> 311

cagccaccgg	agtggatgcc	atctgcaccc	accgccctga	ccccacaggc	cctgggctgg	60
acagagagca	gctgtatctg	gagctgagcc	agctgaccca	cagcatcact	gagctggggc	120
cctacaccct	ggacagggac	agtctctatg	tcaatggttt	cacacagcgg	agctctgtgc	180
ccaccactag	cattcctggg	acccccacag	tggacctggg	aacatctggg	actccagttt	240
ctaaacctgg	tccctcggtc	gccagccctc	tctgggtgct	attcactctc	aacttcacca	300
tcaccaacct	gcggtatgag	gagaacatgc	agcaccctgg	ctccaggaag	ttcaacacca	360
cggagagggg	ccttcagggc	ctgggtccctg	ttcaagagca	ccagtgttgg	ccctctgtac	420
tctggctgca	gactgacttt	gctcaggcct	gaaaaggatg	ggacagccac	tggagtggat	480
gccatctgca	cccaccaccc	tgacccccaa	agccctaggc	tggacagaga	gcagctgtat	540
tgggagctga	gccagctgac	ccacaatatc	actgagctgg	gcccctatgc	cctggacaac	600
gacagcctct	ttgtcaatgg	tttcaactcat	cggagctctg	tgtccaccac	cagcactcct	660
gggaccccc	cagtgtatct	gggagcatct	aagactccag	cctcgatatt	tggcccttca	720
gctgccagcc	atctcctgat	actattccac	ctcaacttca	ccatcactaa	cctgcggtat	780
gaggagaaca	tgtggcctgg	ctccaggaag	ttcaacacta	cagagagggg	ccttcagggc	840
ctgctaaggc	ccttgttcaa	gaacaccagt	gttggccctc	tgtactctgg	ctgcaggctg	900
accttgcctc	ggccagagaa	agatggggaa	gccaccggag	tggatgccat	ctgcaccac	960

cgccctgacc ccacaggccc tgggctggac agagagcagc tgtatatttga gctgagccag 1020
 ctgaccacaca gcactactga gctgggcccc tacacactgg acagggacag tctctatgtc 1080
 aatgggtttca cccatcgag ctctgtaccc accaccagca ccgggggtggg cagcgaggag 1140
 ccattcacac tgaacttcac catcaacaac ctgcgctaca tggcggacat gggccaaccc 1200
 ggctccctca agttcaacat cacagacaac gtcatgaagc acctgctcag tcctttgttc 1260
 cagaggagca gcctgggtgc acggtacaca ggctgcaggg tcatcgact aaggtctgtg 1320
 aagaacggtg ctgagacacg ggtggacctc ctctgcacct acctgcagcc cctcagcggc 1380
 ccaggtctgc ctatcaagca ggtgttccat gagctgagcc agcagaccca tggcatcacc 1440
 cggtctgggccc cctactctct ggacaaagac agcctctacc ttaacggtta caatgaacct 1500
 ggtccagatg agcctcctac aactcccaag ccagccacca cattcctgcc tcctctgtca 1560
 gaagccacaa cagccatggg gtaccacctg aagacctca cactcaactt caccatctcc 1620
 aatctccagt attcaccaga tatgggcaag ggctcagcta cattcaactc caccgagggg 1680
 gtccttcagc acctgctcag acccttggtc cagaagagca gcatgggccc cttctacttg 1740
 gggtgccaac tgatctccct caggcctgag aaggatgggg cagccactgg tgtggacacc 1800
 acctgcacct accacctga ccctgtgggc cccgggctgg acatacagca gctttactgg 1860
 gagctgagtc agctgaccca tgggtgcacc caactgggct tctatgtcct ggacagggat 1920
 agcctcttca tcaatggcta tgcaccccag aatttatcaa tccggggcga gtaccagata 1980
 aatttccaca ttgtcaactg gaacctcagt aatccagacc ccacatctc agagtacatc 2040
 accctgctga gggacatcca ggacaaggtc accacactct acaaaggcag tcaactacat 2100
 gacacattcc gcttctgcct ggtcaccaac ttgacgatgg actccgtgtt ggtcactgtc 2160
 aaggcattgt tctcctccaa tttggacccc agcctgggtg agcaagtctt tctagataag 2220
 accctgaatg cctcattcca ttggctgggc tccacctacc agttgggtgga catccatgtg 2280
 acagaaatgg agtcatcagt ttatcaacca acaagcagct ccagcacca gcacttctac 2340
 ctgaatttca ccatcaccaa cctaccatat tcccaggaca aagcccagcc aggcaccacc 2400
 aattaccaga ggaacaaaag gaatattgag gatgcgctca accaactctt ccgaaacagc 2460
 agcatcaaga gttatttttc tgactgtcaa gtttcaacat tcaggtctgt ccccaacagg 2520
 caccacaccg ggggtggaact cctgtgtaac ttctcgccac tggctcggag agtagacaga 2580
 gttgccatct atgaggaatt tctgcggatg acccggaatg gtaccagct gcagaacttc 2640
 accctggaca ggagcagtg ccttgtggat ggggtattttt ccaacagaaa tgagccctta 2700
 actgggaatt ctgaccttcc cttctgggct gtcactctca tcggcttggc aggactcctg 2760
 ggactcatca catgcctgat ctgcggtgtc ctgggtgacca cccgcggcg gaagaaggaa 2820
 ggagaataca acgtccagca acagtgcaca ggctactacc agtcacacct agacctggag 2880
 gatctgcaat gactggaaact tgcgggtgcc tggggtgcct ttccccagc cagggtccaa 2940
 agaagcttgg ctggggcaga aataaaccat attggtcgga cacaaaaaaa aaaaaa 2996

<210> 312

<211> 914

<212> PRT

<213> Homo sapien

<400> 312

Met	Ser	Met	Val	Ser	His	Ser	Gly	Ala	Leu	Cys	Pro	Pro	Leu	Ala	Phe
1				5					10					15	
Leu	Gly	Pro	Pro	Gln	Trp	Thr	Trp	Glu	His	Leu	Gly	Leu	Gln	Phe	Leu
			20					25					30		
Asn	Leu	Val	Pro	Arg	Leu	Pro	Ala	Leu	Ser	Trp	Cys	Tyr	Ser	Leu	Ser
		35					40				45				
Thr	Ser	Pro	Ser	Pro	Thr	Cys	Gly	Met	Arg	Arg	Thr	Cys	Ser	Thr	Leu
	50					55					60				
Ala	Pro	Gly	Ser	Ser	Thr	Pro	Arg	Arg	Gly	Ser	Phe	Arg	Ala	Trp	Ser
65					70					75					80

														485						490						495		
Pro	Asp	Met	Gly	Lys	Gly	Ser	Ala	Thr	Phe	Asn	Ser	Thr	Glu	Gly	Val													
			500					505						510														
Leu	Gln	His	Leu	Leu	Arg	Pro	Leu	Phe	Gln	Lys	Ser	Ser	Met	Gly	Pro													
			515					520						525														
Phe	Tyr	Leu	Gly	Cys	Gln	Leu	Ile	Ser	Leu	Arg	Pro	Glu	Lys	Asp	Gly													
			530					535						540														
Ala	Ala	Thr	Gly	Val	Asp	Thr	Thr	Cys	Thr	Tyr	His	Pro	Asp	Pro	Val													
545					550						555						560											
Gly	Pro	Gly	Leu	Asp	Ile	Gln	Gln	Leu	Tyr	Trp	Glu	Leu	Ser	Gln	Leu													
			565					570						575														
Thr	His	Gly	Val	Thr	Gln	Leu	Gly	Phe	Tyr	Val	Leu	Asp	Arg	Asp	Ser													
			580					585						590														
Leu	Phe	Ile	Asn	Gly	Tyr	Ala	Pro	Gln	Asn	Leu	Ser	Ile	Arg	Gly	Glu													
			595					600						605														
Tyr	Gln	Ile	Asn	Phe	His	Ile	Val	Asn	Trp	Asn	Leu	Ser	Asn	Pro	Asp													
610					615						620																	
Pro	Thr	Ser	Ser	Glu	Tyr	Ile	Thr	Leu	Leu	Arg	Asp	Ile	Gln	Asp	Lys													
625					630						635						640											
Val	Thr	Thr	Leu	Tyr	Lys	Gly	Ser	Gln	Leu	His	Asp	Thr	Phe	Arg	Phe													
			645					650						655														
Cys	Leu	Val	Thr	Asn	Leu	Thr	Met	Asp	Ser	Val	Leu	Val	Thr	Val	Lys													
			660					665						670														
Ala	Leu	Phe	Ser	Ser	Asn	Leu	Asp	Pro	Ser	Leu	Val	Glu	Gln	Val	Phe													
			675					680						685														
Leu	Asp	Lys	Thr	Leu	Asn	Ala	Ser	Phe	His	Trp	Leu	Gly	Ser	Thr	Tyr													
690					695						700																	
Gln	Leu	Val	Asp	Ile	His	Val	Thr	Glu	Met	Glu	Ser	Ser	Val	Tyr	Gln													
705					710						715						720											
Pro	Thr	Ser	Ser	Ser	Ser	Thr	Gln	His	Phe	Tyr	Leu	Asn	Phe	Thr	Ile													
			725					730						735														
Thr	Asn	Leu	Pro	Tyr	Ser	Gln	Asp	Lys	Ala	Gln	Pro	Gly	Thr	Thr	Asn													
			740					745						750														
Tyr	Gln	Arg	Asn	Lys	Arg	Asn	Ile	Glu	Asp	Ala	Leu	Asn	Gln	Leu	Phe													
			755					760						765														
Arg	Asn	Ser	Ser	Ile	Lys	Ser	Tyr	Phe	Ser	Asp	Cys	Gln	Val	Ser	Thr													
770					775						780																	
Phe	Arg	Ser	Val	Pro	Asn	Arg	His	His	Thr	Gly	Val	Asp	Ser	Leu	Cys													
785					790						795						800											
Asn	Phe	Ser	Pro	Leu	Ala	Arg	Arg	Val	Asp	Arg	Val	Ala	Ile	Tyr	Glu													
			805					810						815														
Glu	Phe	Leu	Arg	Met	Thr	Arg	Asn	Gly	Thr	Gln	Leu	Gln	Asn	Phe	Thr													
			820					825						830														
Leu	Asp	Arg	Ser	Ser	Val	Leu	Val	Asp	Gly	Tyr	Phe	Pro	Asn	Arg	Asn													
			835					840						845														
Glu	Pro	Leu	Thr	Gly	Asn	Ser	Asp	Leu	Pro	Phe	Trp	Ala																

Gln Gln Gln Cys Pro Gly Tyr Tyr Gln Ser His Leu Asp Leu Glu Asp
 900 905 910
 Leu Gln

<210> 313
 <211> 656
 <212> DNA
 <213> Homo sapiens

<400> 313
 acagccagtc ggagctgcaa gtgtttctggg tggatcgcy atatgcactc aaaatgctct 60
 ttgtaaagga aagccacaac atgtccaagg gacctgaggc gacttggagg ctgagcaaag 120
 tgcagtttgt ctacgactcc tcggagaaaa cccacttcaa agacgcagtc agtgctggga 180
 agcacacagc caactcgcac cacctctctg ccttggtcac ccccgctggg aagtcctatg 240
 agtgtcaagc tcaacaaaacc atttactagg cctctagtga tccgcagaag acggtcacca 300
 tgatcctgtc tgcggtccac atccaacctt ttgacattat ctcagatttt gtcttcagtg 360
 aagagcataa atgcccagtg gatgagcggg agcaactgga agaaaccttg cccctgattt 420
 tggggctcat cttgggcctc gtcacatggg taacactcgc gatttaccac gtccaccaca 480
 aaatgactgc caaccagggtg cagatccctc gggacagatc ccagtataag cacatgggct 540
 agaggccgtt aggcaggcac cccctattcc tgcctcccca actggatcag gtagaacaac 600
 aaaagcactt ttccatcttg tacacgagat acaccaacat agctacaatc aaacag 656

<210> 314
 <211> 519
 <212> DNA
 <213> Homo sapiens

<400> 314
 tgtgcgtgga ccagtcagct tccgggtgtg actggagcag ggcttgctct cttcttcaga 60
 gtcactttgc aggggttggg gaagctgctc ccatccatgt acagctccca gtctactgat 120
 gtttaaggat ggtctcgggtg gttaggccca ctagaataaa ctgagtccaa tacctctaca 180
 cagttatgtt taactgggct ctctgacacc gggaggaagg tggcgggggt taggtgttgc 240
 aaacttcaat gggtatgcgg ggatgttcac agagcaagct ttggtatcta gctagtctag 300
 cattcattag ctaatgggtg cctttgggtat ttattaaaat caccacagca tagggggact 360
 ttatgttttag gttttgtcta agagttagct tatctgcttc ttgtgctaac agggctattg 420
 ctaccaggga ctttggacat gggggccagc gtttggaaac ctcatctagt ttttttgaga 480
 gataggccac tggccttggg cctcggccgc gaccacgct 519

<210> 315
 <211> 441
 <212> DNA
 <213> Homo sapiens

<400> 315
 cacagagcgt ttattgacac caccactcct gaaaattggg atttcttatt aggttcccct 60
 aaaagttccc atgttgatta catgtaaata gtcacatata tacaatgaag gcagtttctt 120
 cagaggcaac cagggtttat agtgctagggt aaatgtcatt tcttttgtgc tactgactca 180
 ttgtcaaacy tctctgcact gttttcagcc tctccacggt gcctctgtcc tgcttcttag 240
 ttctttcttt gtgacaaaacc aaaagaataa gaggatttag aacaggactg cttttcccct 300
 atgatttaaa aattccaatg actttcgccc ttgggagaaa tttccaagga aatctctctc 360

gctcgtctctc tccgtttttcc tttgtgagct tctgggggag ggtagtggt gactttttga 420
tacgaaaaaa tgcattttgt g 441

<210> 316
<211> 247
<212> DNA
<213> Homo sapiens

<400> 316
tggcgcggt gctggatttc accttcttgc acctgccggt gagcgcttg ggtctaaagg 60
ggcgggatac tccattatgg cccctcgccc tgtagggctg gaatagttag aaaaggcaac 120
ccagtctagc ttggtaagaa gagagacatg cccccaacct cggcgccctt tttcctcacg 180
atctgctgtc cttacttcag cgactgcagg agcttcacct gcaagaaaac agcattgagc 240
tgctgac 247

<210> 317
<211> 409
<212> DNA
<213> Homo sapiens

<400> 317
tgacagggt cctggagttg ttaagtcacc aagtagctgc aggggatgga cactgccccca 60
cacgatgtgg gatgaacagc agccttggtt tgtagcccag ggtgtccatg gatttgaccc 120
gaatgctccc tggaggccct gtggcgagga caggcactgg atggtccaga ccctctggct 180
ggaggagtgg tggagccagg actgggcctt cagccatgag ggctagaata acctgacctc 240
ttgcattcta acaactgggtc attaatgaca cctttccagt ggatgttgca aaaaccaaca 300
ctgtcaggaa cctggccctg ggagggctca ggtgagctca caaggagagg tcaagccaag 360
ccaaagggtg ggkaacacac aacaccaggg gaaaccagcc cccaaacca 409

<210> 318
<211> 320
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(320)
<223> n = A,T,C or G

<400> 318
caaggnagat cttaagnngg gtentatgta agtgtgctcc tggctccagg gttcctggag 60
cctcacgagg tcaggggaac ccttgtagaa ctccaccagc agcatcatct cgtgaaggat 120
gtcattgggtc aggaagctgt cctggacgta ggccatctcc acatccatgg ggatgccata 180
gtcactgggc ctttgctcgg gaggaggcat caccagaaa ggcgagatct tggactcggg 240
gcctgggttg ccagaatagt aaggggagca naggagggcg aggcagggtt ggaagccatt 300
gctggagccc tgcagccgca 320

<210> 319
<211> 212
<212> DNA
<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)...(212)

<223> n = A,T,C or G

<400> 319

```
tgaagcaata gcgcccccat tttacaggcg gagcatggaa gccagagagg tgggtggggg 60
agggggtcct tccctggctc aggcagatgg gaagatgagg aagccgctga agacgctgtc 120
ggcctcagag ccctggtaaa tgtgaccctt tttggggtct ttttcaacc anacctggtc 180
accctgtgtc agacctcggc cgcgaccacg ct 212
```

<210> 320

<211> 769

<212> DNA

<213> Homo sapiens

<400> 320

```
tggaggtgta gcagtgagag gagatytcag gcaagagtgt cacagcagag ccctaaascc 60
tccaactcac cagtgagaga tgagactgcc cagtactcag cttcatctc ctggggccacc 120
tggagggcgt ctttctccat cagcgcatatc tgagcagggg tactcagatc cttcttgga 180
cctacaagga agagaagcac actggaaggg tcattctcct tcagggcacc ggccagccac 240
tgcctgccat gggaggtgga aagtaaggga tgagtgaagc tgcagggccc ctccactga 300
cattcatagg cccaattacc ccctctctgg tcctacatgc attcttcttc ttctgacca 360
cccctctgtt ctgaaccctc tcttcccgga gcctccatt atattgcagg atgctcactt 420
acttggtatg ttccagagat gccacatcat tcagggtgaa gacaatgatg atggcttgga 480
agagtggcag aaacagcccc aggttgacag ggaagacact actgctcatt tccccaatcc 540
ttccagctcc atatgagaaa gccatgtgca ctctgagacc cacctacccc acttcaccca 600
gccccttacc ttgagctcct ctatagtagg ttgatgcaat gcatttgaac ctctcctgcc 660
cagcgggtatc ccaactggaa ggaaggaaga gtgaagcaca ggtatgtatc ttgggggggtg 720
tgggtgctgg ggagaaggga tagctggaag ggggtgtgga gcactcaca 769
```

<210> 321

<211> 690

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)...(690)

<223> n = A,T,C or G

<400> 321

```
tgggctgtgg gcggcacctg tgctctgcag gccagacagc gatagaagcc tttgtctgtg 60
cctactcccc cggaggcaac tgggaggtca acgggaagac aatcatcccc tataagaagg 120
gtgcctgggtg ttcgctctgc acagccagtg tctcaggctg cttcaaagcc tgggaccatg 180
cagggggggtc ctgtgaggtc cccaggaatc cttgtgcgat gagctgccag aacctatggc 240
gtctcaacat cagcacctgc cactgccact gtccccctgg ctacacgggc agatactgcc 300
aagtgaggtg cagcctgcag tgtgtgcacg gccgggttcg ggaggaggag tgctcgtgcg 360
tctgtgacat cggctacggg ggagcccagt gtgccaccaa ggtgcatttt ccttccaca 420
cctgtgacct gaggatcgac ggagactgct tcatggtgtc ttcagaggca gacacctatt 480
```


<210> 333
 <211> 384
 <212> DNA
 <213> Homo sapiens

<400> 333
 cggaaaactt cgaggaattg ctcaaagtgc tgggggtgaa tgtgatgctg aggaagattg 60
 ctgtggctgc agcgtccaag ccagcagtgg agatcaaaca ggagggagac actttctaca 120
 tcaaaacctc caccaccgtg cgcaccacag agattaactt caagggtggg gaggagtgtg 180
 aggagcagac tgtggatggg aggccctgta agagcctggg gaaatgggag agtgagaata 240
 aaatgggtctg tgagcagaag ctctgaagg gagagggccc caagacctcg tggaccagag 300
 aactgaccaa cgatggggaa ctgatcctga ccatgacggc ggatgacgtt gtgtgcacca 360
 ggggtctacgt ccgagagtga gcgg 384

<210> 334
 <211> 169
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1)...(169)
 <223> n = A,T,C or G

<400> 334
 cnacaaacag agcagacacc ctggatccgg tctgtctact ggccaggacg gctggaccgt 60
 aaaattgaat ttccacttcc tgaccgccgc cagaagagat tgattttctc cactatcact 120
 agcaagatga acctctctga ggaggttgac ttggaagact atgtngccc 169

<210> 335
 <211> 185
 <212> DNA
 <213> Homo sapiens

<400> 335
 ccaggtttgc agcccaggct gcacatcagg ggactgcctc gcaatacttc atgctgttgc 60
 tgctgactga tgggtgctgtg acggatgtgg aagccacacg tgaggctgtg gtgcgtgcct 120
 cgaacctgcc catgtcagtg atcattgtgg gtgtgggtgg tgctgacttt gaggccatgg 180
 agcag 185

<210> 336
 <211> 358
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1)...(358)
 <223> n = A,T,C or G

<400> 336

<400> 339
 ttcaactgag gactcatttc gtgccctttg ttgacttcaa gcaaagnctt tcanggtctn 60
 caaggacgnc acatttccac ttgcgaatgn nctcangget catcttgaag aanaagnanc 120
 ccaagtgtctg gatcccagac tcgggggtaa ccttgtgggt aagagctcat ccagtttatg 180
 ctttaggacg tccanctact cgggggagct ggaagcctgc gtggatgcgg cctgtctgga 240
 cctcgccgcg gaccacgcta 260

<210> 340
 <211> 220
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1)...(220)
 <223> n = A,T,C or G

<400> 340
 ctggaagccc ggctnngnct ggcagcggaa ggagccaggc aggttcacgc agcgggtgctg 60
 gcagtagcgg tagcggcact cgtctatgtc cacacactcg ggcccgatct tgcggttaacc 120
 atcagggcag gtgcactgat aggagccagg caagttatgg cagtcctggc tggggcgaca 180
 gtcgtgcagg gcctgggcac actcgtccac atccacacag 220

<210> 341
 <211> 384
 <212> DNA
 <213> Homo sapiens

<400> 341
 ctgctaccag gggagcgcaga gctgactatc ccagcctcgg ctaatgtatt ctacgccatg 60
 gatggagctt cacacgattt cctcctgcgg cagcggcgaa ggtcctctac tgctacaccg 120
 ggcgtcacca gtggcccgtc tgccctcagga actcctccga gtgagggagg agggggctcc 180
 tttcccagga tcaaggccac agggaggaag attgcacggg cactgttctg aggaggaagc 240
 cccgttggct tacagaagtc atggtgttca taccagatgt gggtagccat cctgaatggc 300
 ggcaattata tcacattgag acagaaattc agaaagggag ccagccaccc tggggcagtg 360
 aagtgccact ggtttaccag acag 384

<210> 342
 <211> 245
 <212> DNA
 <213> Homo sapiens

<400> 342
 ctggctaagc tcatcattgt tactgggtggg caccatgtcc ttgaagcttc aggcaagcaa 60
 tgtaaccaac aagaatgacc ccaagtccat caactctcga gtcttcattg gaaacctcaa 120
 cacagctctg gtgaagaaat cagatgtgga gaccatcttc tctaagtatg gccgtgtggc 180
 cggctgttct gtgcacaagg gctatgcctt tgttcagtac tccaatgagc gccatgcccc 240
 gccag 245

<210> 343

<400> 346
 ctgctccagg gcggtggtgtg ccttcgtggc ctctgcctcc tccgaggagc caggctgtgt 60
 tctcttcaga atgttctgga gcagcagttt gaggcgggtg atgcgttgga agggcagaat 120
 cagaaaggac ttgagggaaa ggcgctggca gacggggctg ctctccagct tctccaagac 180
 ctcccggaat ttgctgttgc tattcatcag gctctggaag gtgcgttcct gataggctctg 240
 gttggtgaca taaggcaggt agaccggcg gaagtctggg gcgtggttca ggactacgtc 300
 acatacttgg aaggagaaga tattgttctc aaagtctct tccaggtctg aaaggaacgt 360
 ggcgtgacg 370

<210> 347
 <211> 416
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1)...(416)
 <223> n = A,T,C or G

<400> 347
 ctgttgtgct gtgtatggac gtgggcttta ccatgagtaa ctccattcct ggtatagaat 60
 ccccatattga acaagcaaag aaggtgataa ccatgtttgt acagcgacag gtgtttgctg 120
 agaacaagga tgagattgct ttagtcctgt ttggtacaga tggcactgac aatccccctt 180
 ctggtgggga tcagtatcag aacatcacag tgcacagaca tctgatgcta ccagattttg 240
 atttgctgga ggacattgaa agcaaaatcc aaccaggttc tcaacaggct gacttcctgg 300
 atgcactaat cgtgagcatg gatgtgattc aacatgaaac aataggaaag aagtttggag 360
 aagaggcata ttgaaatatt cactgacctc aagcagcccg attcagcaaa agtcan 416

<210> 348
 <211> 351
 <212> DNA
 <213> Homo sapiens

<400> 348
 gtacaggaga ggatggcagg tgcagagcgg gcactgagct ctgcagggtga aagggtcgg 60
 cagttggatg ctctcctgga ggctctgaaa ttgaaacggg caggaaatag tctggcagcc 120
 tctacagcag aagaaacggc aggcagtgcc cagggacyag caggagacag atgccttcct 180
 cttgtctcaa ctgcaaagag gcgttccttc ctctttcact aatcctcctc agcacagacc 240
 ctttacgggt gtcaggctgg gggacagtaa ggtctttccc ttcccacaag gccatatctc 300
 aggctgtctc agtgggggga aaccttggac aatacccggg ctttcttggg c 351

<210> 349
 <211> 207
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1)...(207)
 <223> n = A,T,C or G

<210> 357
 <211> 188
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1)...(188)
 <223> n = A,T,C or G

<400> 357
 tcgaccacgc cctcgtagcg catgngctnc aggacgatgc tcagagtgat gaacacccccg 60
 gtgoggccca cgccagcact gcagtgcacc gtgataggcc catcctgtcc aaactgctcc 120
 ttggtcttat gcacctgccc gatgaagtca atgaatccct cgctgtctt gggcacgccc 180
 tgctctgg 188

<210> 358
 <211> 291
 <212> DNA
 <213> Homo sapiens

<400> 358
 ctgggagcat cggcaagcta ctgccttaaa atccgatctc cccgagtgca caatttctgt 60
 cccttttaag ggttcacaac actaaagatt tcacatgaaa gggttgtgat tgatttgagc 120
 aggcaggcgg tacgtgacag gggctgcatg caccggtggt cagagagaaa cagaacaggg 180
 caggggaattt cacaatgttc ttctatacaa tggctggaat ctatgaataa catcagtttc 240
 taagttatgg gttgattttt aactactggg tttaggccag gcaggcccag g 291

<210> 359
 <211> 117
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1)...(117)
 <223> n = A,T,C or G

<400> 359
 gccaccacac tccagcctgg gcaatacagc aagactgtct caaaaaaaaaa aaaaaaaaaa 60
 ccaaaaaaaaa ctcaaaaang taatgaatga tacccaangn gccttttcta gaaaaag 117

<210> 360
 <211> 394
 <212> DNA
 <213> Homo sapiens

<400> 360
 ctgttcctct ggggtgggtcc agttctagag tgggagaaaag ggagtcaggc gcattgggaa 60
 tcgtgggtcc agtctgggtg cagaatctgc acatttgcca agaaattttc cctgtttgga 120
 aagtttgccc cagctttccc gggcacacca ccttttgtcc caagtgtctg ccggtcgacc 180

<221> misc_feature
 <222> (1)...(327)
 <223> n = A,T,C or G

<400> 367
 ccagctctgt ctcatacttg actctaaagt cttnagcagc aagacgggca ttgnnaatct 60
 gcagaacgat gcgggcattg tccacagtat ttgcgaagat ctgagccctc aggtcctcga 120
 tgatcttgaa gtaatggctc cagtctctga cctgggggtcc cttcttctcc aagtgtctcc 180
 ggattttgct ctccagcctc cggttctcgg tctccaggct cctcactctg tccaggtaag 240
 aggccaggcg gtcgttcagg ctttgcattg tctccttctc gttctggatg cctccattc 300
 ctgccagacc cccggctatc ccggtgg 327

<210> 368
 <211> 306
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1)...(306)
 <223> n = A,T,C or G

<400> 368
 ctggagaagg acttcagcag tttnaagaag tactgccaaag tcatccgtgt cattgcccac 60
 acccagatgc gcctgcttcc tctgcgccag aagaaggccc acctgatgga gatccagggtg 120
 aacggaggca ctgtggccga gaagctggac tggggcccgag agaggcttga gcagcaggta 180
 cctgtgaacc aagtgtttgg gcaggatgag atgatcgacg tcatcggggt gaccaagggc 240
 aaaggctaca aaggggtcac cagtcgttgg cacaccaaga agctgccccg caagaccac 300
 cgagga 306

<210> 369
 <211> 394
 <212> DNA
 <213> Homo sapiens

<400> 369
 tcgaccacaca ccggaacacg gagagctggg ccagcattgg cacttgatag gatttcccgt 60
 cggctgccac gaaagtgcgt ttctttgtgt tctcgggttg gaaccgtgat ttccacagac 120
 ccttgaaata cactgcgttg acgaggacca gtctggtgag cacaccatca ataagatctg 180
 gggacagcag attgtcaatc atatccctgg ttctattttt aaccatgca ttgatggaat 240
 cacaggcaga ggctggatcc tcaaagttca cattccggac ctcacactgg aacacatctt 300
 tgttccttgg aacaaaaggc acttcaattt cagaggcatt cttaacaaac acggcggttag 360
 ccactgtcac aatgtcttta ttcttcttgg agac 394

<210> 370
 <211> 653
 <212> DNA
 <213> Homo sapiens

<400> 370
 ccaccacacc caattccttg ctggtatcat ggcagccgcc acgtgccagg attacgggt 60


```

gctccacctg gactacatcg ggccttgcaa atacatcccc ccttgccctgg actctgagct 180
gaccgaattc cccctgcgca tgcgggactg gctcaagaac gtccctggta cccctgtatga 240
gagggatgag gacaacaacc ttctgactga gaagcagaag ctgcgggtga agaagatcca 300
tgagaatgag aagcgctcg aggaggaga ccacccctg gagctgctgg cccgggactt 360
cgagaagaac tataacatgt acatcttccc tg 392

```

```

<210> 377
<211> 292
<212> DNA
<213> Homo sapiens

```

```

<400> 377
caatgtttga tgcttaaccc cccaatttc tgtgagatgg atggccagt caagcgtgac 60
ttgaagtgtt gcatgggcat gtgtgggaaa tcctgcgttt cccctgtgaa agcttgattc 120
ctgccatatt gaggaggctc tggagtcctg ctctgtgtgg tccaggctct ttccaccctg 180
agacttggtc ccaccactga tatcctcctt tggggaaagg cttggcacac agcaggcttt 240
caagaagtgc cagttgatca atgaataaat aaacgagcct atttctcttt gc 292

```

```

<210> 378
<211> 395
<212> DNA
<213> Homo sapiens

```

```

<400> 378
ctgctgcttc agcgaagggt ttctggcata tccaatgata aggctgcca agactgttcc 60
aataccagca ccagaaccag ccactcctac tgttgagca cctgcaccaa taaatttggtc 120
agcagtatca atgtctctgc tgattgcact ggtctgaaac tccctttgga ttagctgaga 180
cacaccattc tgggacctga ttttcctaag atagaactcc aactctttgc cctctagcac 240
atagccatct gctcgccac actgtcccgg ccttgaagcg atgcacgcaa gaagcttgcc 300
ctgctggaac tgcctcctca ggagactgct gattttggca ttctttttcc ttcatcata 360
tttcttctga attttttaga tcgttttttg tttaa 395

```

```

<210> 379
<211> 223
<212> DNA
<213> Homo sapiens

```

```

<400> 379
ccagatgaaa tgctgcgca atggctgtgg gaaggtgtcc tgtgtcact ccaattttctg 60
agctccagcc accaccaggc tgagcagtga ggagagaaag tttctgctg gccctgcac 120
tggttccagc ccacctgccc tccccctttt cgggactctg tattecctct tgggctgacc 180
acagcttctc cctttcccaa ccaataaagt aaccactttc agc 223

```

```

<210> 380
<211> 317
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)...(317)

```

<223> n = A,T,C or G

<400> 380

```
tcgaccacag tattccaacc ctctgtgcn tngagaagt atggagggtg ctgacaacca 60
gggtgcagga gaacaaggta gaccagttag gcagaatat tatcgggat atagaccacg 120
attccgcagg ggcctctctc gccaaagaca gcctagagag gacggcaatg aagaagataa 180
agaaaatcaa ggagatgaga cccaagggtc gcagccacct caacgtcgt accgccgcaa 240
cttcaattac cgacgcagac gccagaaaa ccctaaacca caagatggca aagagacaaa 300
agcagccgat ccaccag                                     317
```

<210> 381

<211> 392

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)...(392)

<223> n = A,T,C or G

<400> 381

```
cctgaaggaa gagctggcct acctgaatnn naaccatgag gaggaatca gtacgctgag 60
gggccaagtg ggaggccagg tcagtgtgga ggtggattcc gctccgggca ccgatctcgc 120
caagatcctg agtgacatgc gaagccaata tgaggtcatg gccgagcaga accggaagga 180
tgctgaagcc tggttcacca gccggactga agaattgaac cgggaggctg ctggccacac 240
ggagcagctc cagatgagca ggtccgaggt tactgacctg cggcgacccc ttcaggggtc 300
tgagattgag ctgcagtcac agacctcggc cgcgaccacg ctaagccgaa ttccagcaca 360
ctggcgggccg ttactagtgg atccgagctc gg                                     392
```

<210> 382

<211> 234

<212> DNA

<213> Homo sapiens

<400> 382

```
cctcgatgtc taaatgagcg tggtaaagga tgggtgectg tggggtctcg tagatacctc 60
gggacttcat tccaatgaag cggttctcca cgatgtcaat acggcccacg ccatgcttgc 120
ccgcgacttc gttcaggtag atgaagagct ccaaggaggt ctgggtgggtg gtgccatcct 180
tgacgttggg caccttcaca gggacccctt ttttgaactc catctccaga atgt      234
```

<210> 383

<211> 396

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)...(396)

<223> n = A,T,C or G

<400> 383

09536801.034000

```

ccttgacctt ttcagcaagt gggaagggtgt tttccgtctc cacagacaag gccaggactc 60
gtttgnaccc gttgatgata gaatggggta ctgatgcaac agttgggtag ccaatctgca 120
gacagacact ggcaacattg cggacaccca ggatttcaat ggtgcccctg gagatttttag 180
tggtgatacc taaagcctgg aaaaaggagg tcttctcggg cccgagacca gtgttctggg 240
ctggcacagt gacttcacat ggggcaatgg caccagcacg ggcagcagac ctgccccggc 300
ggccgctoga aagccgaatt ccagcacact ggccggccgtt actagtggat ccgagctcgg 360
taccaagctt ggcgtaatca tggtcatagc tgtttc 396

```

<210> 384
 <211> 396
 <212> DNA
 <213> Homo sapiens

```

<400> 384
gctgaatagg cacagagggc acctgtacac cttcagacca gtctgcaacc tcaggctgag 60
tagcagtga ctcaggagcg ggagcagtc attcaccctg aaattcctcc ttggtcactg 120
ccttctcagc agcagcctgc tcttcttttt caatctcttc aggatctctg tagaagtaca 180
gatcaggcat gacctcccat ggggtgttcac gggaaatggg gccacgcatg cgcagaactt 240
cccagaccag catccaccac atcaaaccac ctgagtgagc tcccttggtt ttgcatggga 300
tggcaatgtc cacatagcgc agaggagaat ctgtgttaca cagcgcaatg gtaggtagg 360
taacataaga tgcctccgtg agaggctggg ggtcag 396

```

<210> 385
 <211> 2943
 <212> DNA
 <213> Homo sapiens

```

<400> 385
cagccaccgg agtggatgcc atctgcaccc accgccctga cccacagggc cctgggctgg 60
acagagagca gctgtatttg gagctgagcc agctgaccca cagcatcact gagctggggc 120
cctacaccct ggacagggac agtctctatg tcaatggttt cacacagcgg agctctgtgc 180
ccaccactag cattcctggg acccccacag tggacctggg aacatctggg actccagttt 240
ctaaacctgg tccctcggct gccagccctc tcctgggtgt attcactctc aacttcacca 300
tcaccaacct gcggtatgag gagaacatgc agcaccctgg ctccaggaag ttcaacacca 360
cggagagggg ccttcagggg ctggtccctg ttcaagagca ccagtgttg cctctgttac 420
tctggctgca gactgacttt gctcaggcct gaaaaggatg ggacagccac tggagtggat 480
gccatctgca cccaccaccc tgacccccaa agccctaggc tggacagaga gcagctgtat 540
tgggagctga gccagctgac ccacaatatc actgagctgg gccctatgc cctggacaac 600
gacagcctct ttgtcaatgg ttctactcat cggagctctg tgtccaccac cagcactcct 660
gggaccccca cagtgtatct gggagcatct aagactccag cctcgatatt tggcccttca 720
gctgccagcc atctcctgat actattcacc ctcaacttca ccatcactaa cctgcgggat 780
gaggagaaca tgtggcctgg ctccaggaag ttcaacacta cagagagggg ccttcagggg 840
ctgctaaggc ccttggttcaa gaacaccagt gttggccctc tgtactctgg ctgcaggctg 900
accttgctca ggccagagaa agatggggaa gccaccggag tggatgccat ctgcaccac 960
cgccctgacc ccacaggccc tgggctggac agagagcagc tgtatttggg gctgagccag 1020
ctgaccacac gcatcactga gctgggcccc tacacactgg acagggacag tctctatgtc 1080
aatggtttca cccatcggag ctctgtaccc accaccagca ccgggggtgg cagcgaggag 1140
ccattcacac tgaacttcac catcaacaac ctgcgtaca tggcggacat gggccaaccc 1200
ggctccctca agttcaacat cacagacaac gtcataagc acctgctcag tcctttgttc 1260
cagaggagca gcctgggtgc acggtacaca ggtgcaggg tcatcgcact aaggtctgtg 1320
aagaacggtg ctgagacacg ggtggacctc ctctgcacct acctgcagcc cctcagcggc 1380

```



```

accagttggt ggacatccat gtgacagaaa tggagtcac agtttatcaa ccaacaagca 1080
gctccagcac ccagcacttc tacctgaatt tcaccatcac caacctacca tattcccagg 1140
acaaagccca gccaggcacc accaattacc agaggaacaa aaggaatatt gaggatgcgc 1200
tcaaccaact cttccgaaac agcagcatca agagttatct ttctgactgt caagtttcaa 1260
cattcaggtc tgtccccaac aggcaccaca cgggggtgga ctccctgtgt aacttctcgc 1320
cactggctcg gagagtagac agagttgcca tctatgagga atttctgcgg atgacccgga 1380
atggtaccca gctgcagaac ttcaccctgg acaggagcag tgccttctgt gatgggtatt 1440
ttccaacag aaatgagccc ttaactggga attctgacct tcccttctgg gctgtcatcc 1500
tcatcggtt ggcaggactc ctgggactca tcacatgcct gatctgcggt gtccctgggtga 1560
ccaccgccc gcggaagaag gaaggagaat acaacgtcca gcaacagtgc ccaggctact 1620
accagtcaca cctagacctg gaggatctgc aatgactgga acttgccggt gcctggggtg 1680
cctttcccc agccagggtc caaagaagct tggctggggc agaaataaac catattgggtc 1740
ggacacaaaa aaaaaaaaaa a 1761

```

<210> 388

<211> 772

<212> PRT

<213> Homo sapiens

<400> 388

```

Met Ser Met Val Ser His Ser Gly Ala Leu Cys Pro Pro Leu Ala Phe
          5                      10                      15

```

```

Leu Gly Pro Pro Gln Trp Thr Trp Glu His Leu Gly Leu Gln Phe Leu
          20                      25                      30

```

```

Asn Leu Val Pro Arg Leu Pro Ala Leu Ser Trp Cys Tyr Ser Leu Ser
          35                      40                      45

```

```

Thr Ser Pro Ser Pro Thr Cys Gly Met Arg Arg Thr Cys Ser Thr Leu
          50                      55                      60

```

```

Ala Pro Gly Ser Ser Thr Pro Arg Arg Gly Ser Phe Arg Ala Trp Ser
          65                      70                      75                      80

```

```

Leu Phe Lys Ser Thr Ser Val Gly Pro Leu Tyr Ser Gly Cys Arg Leu
          85                      90                      95

```

```

Thr Leu Leu Arg Pro Glu Lys Asp Gly Thr Ala Thr Gly Val Asp Ala
          100                     105                     110

```

```

Ile Cys Thr His His Pro Asp Pro Lys Ser Pro Arg Leu Asp Arg Glu
          115                     120                     125

```

```

Gln Leu Tyr Trp Glu Leu Ser Gln Leu Thr His Asn Ile Thr Glu Leu
          130                     135                     140

```

```

Gly Pro Tyr Ala Leu Asp Asn Asp Ser Leu Phe Val Asn Gly Phe Thr
          145                     150                     155                     160

```

```

His Arg Ser Ser Val Ser Thr Thr Ser Thr Pro Gly Thr Pro Thr Val

```


	165		170		175
Tyr Leu Gly Ala Ser Lys Thr Pro Ala Ser Ile Phe Gly Pro Ser Ala					
	180		185		190
Ala Ser His Leu Leu Ile Leu Phe Thr Leu Asn Phe Thr Ile Thr Asn					
	195		200		205
Leu Arg Tyr Glu Glu Asn Met Trp Pro Gly Ser Arg Lys Phe Asn Thr					
	210		215		220
Thr Glu Arg Val Leu Gln Gly Leu Leu Arg Pro Leu Phe Lys Asn Thr					
	225		230		235
Ser Val Gly Pro Leu Tyr Ser Gly Cys Arg Leu Thr Leu Leu Arg Pro					
	245		250		255
Glu Lys Asp Gly Glu Ala Thr Gly Val Asp Ala Ile Cys Thr His Arg					
	260		265		270
Pro Asp Pro Thr Gly Pro Gly Leu Asp Arg Glu Gln Leu Tyr Leu Glu					
	275		280		285
Leu Ser Gln Leu Thr His Ser Ile Thr Glu Leu Gly Pro Tyr Thr Leu					
	290		295		300
Asp Arg Asp Ser Leu Tyr Val Asn Gly Phe Thr His Arg Ser Ser Val					
	305		310		315
Pro Thr Thr Ser Thr Gly Val Val Ser Glu Glu Pro Phe Thr Leu Asn					
	325		330		335
Phe Thr Ile Asn Asn Leu Arg Tyr Met Ala Asp Met Gly Gln Pro Gly					
	340		345		350
Ser Leu Lys Phe Asn Ile Thr Asp Asn Val Met Lys His Leu Leu Ser					
	355		360		365
Pro Leu Phe Gln Arg Ser Ser Leu Gly Ala Arg Tyr Thr Gly Cys Arg					
	370		375		380
Val Ile Ala Leu Arg Ser Val Lys Asn Gly Ala Glu Thr Arg Val Asp					
	385		390		395
Leu Leu Cys Thr Tyr Leu Gln Pro Leu Ser Gly Pro Gly Leu Pro Ile					
	405		410		415
Lys Gln Val Phe His Glu Leu Ser Gln Gln Thr His Gly Ile Thr Arg					
	420		425		430
Leu Gly Pro Tyr Ser Leu Asp Lys Asp Ser Leu Tyr Leu Asn Gly Tyr					

000180-1089960


```
<210> 389
<211> 833
<212> PRT
<213> Homo sapiens
```

```

<400> 389
Phe Lys Ser Thr Ser Val Gly Pro Leu Tyr Ser Gly Cys Arg Leu Thr
      5                      10                      15

Leu Leu Arg Pro Glu Lys Asp Gly Thr Ala Thr Gly Val Asp Ala Ile
      20                      25                      30

Cys Thr His His Pro Asp Pro Lys Ser Pro Arg Leu Asp Arg Glu Gln
      35                      40                      45

Leu Tyr Trp Glu Leu Ser Gln Leu Thr His Asn Ile Thr Glu Leu Gly
      50                      55                      60

Pro Tyr Ala Leu Asp Asn Asp Ser Leu Phe Val Asn Gly Phe Thr His
      65                      70                      75                      80

Arg Ser Ser Val Ser Thr Thr Ser Thr Pro Gly Thr Pro Thr Val Tyr
      85                      90                      95

Leu Gly Ala Ser Lys Thr Pro Ala Ser Ile Phe Gly Pro Ser Ala Ala
      100                      105                      110

Ser His Leu Leu Ile Leu Phe Thr Leu Asn Phe Thr Ile Thr Asn Leu
      115                      120                      125

Arg Tyr Glu Glu Asn Met Trp Pro Gly Ser Arg Lys Phe Asn Thr Thr
      130                      135                      140

Glu Arg Val Leu Gln Gly Leu Leu Arg Pro Leu Phe Lys Asn Thr Ser
      145                      150                      155                      160

```


Gln His Leu Leu Arg Pro Leu Phe Gln Lys Ser Ser Met Gly Pro Phe
 435 440 445
 Tyr Leu Gly Cys Gln Leu Ile Ser Leu Arg Pro Glu Lys Asp Gly Ala
 450 455 460
 Ala Thr Gly Val Asp Thr Thr Cys Thr Tyr His Pro Asp Pro Val Gly
 465 470 475 480
 Pro Gly Leu Asp Ile Gln Gln Leu Tyr Trp Glu Leu Ser Gln Leu Thr
 485 490 495
 His Gly Val Thr Gln Leu Gly Phe Tyr Val Leu Asp Arg Asp Ser Leu
 500 505 510
 Phe Ile Asn Gly Tyr Ala Pro Gln Asn Leu Ser Ile Arg Gly Glu Tyr
 515 520 525
 Gln Ile Asn Phe His Ile Val Asn Trp Asn Leu Ser Asn Pro Asp Pro
 530 535 540
 Thr Ser Ser Glu Tyr Ile Thr Leu Leu Arg Asp Ile Gln Asp Lys Val
 545 550 555 560
 Thr Thr Leu Tyr Lys Gly Ser Gln Leu His Asp Thr Phe Arg Phe Cys
 565 570 575
 Leu Val Thr Asn Leu Thr Met Asp Ser Val Leu Val Thr Val Lys Ala
 580 585 590
 Leu Phe Ser Ser Asn Leu Asp Pro Ser Leu Val Glu Gln Val Phe Leu
 595 600 605
 Asp Lys Thr Leu Asn Ala Ser Phe His Trp Leu Gly Ser Thr Tyr Gln
 610 615 620
 Leu Val Asp Ile His Val Thr Glu Met Glu Ser Ser Val Tyr Gln Pro
 625 630 635 640
 Thr Ser Ser Ser Ser Thr Gln His Phe Tyr Leu Asn Phe Thr Ile Thr
 645 650 655
 Asn Leu Pro Tyr Ser Gln Asp Lys Ala Gln Pro Gly Thr Thr Asn Tyr
 660 665 670
 Gln Arg Asn Lys Arg Asn Ile Glu Asp Ala Leu Asn Gln Leu Phe Arg
 675 680 685
 Asn Ser Ser Ile Lys Ser Tyr Phe Ser Asp Cys Gln Val Ser Thr Phe
 690 695 700

Thr Ser Lys Gly Lys Gly Asn Ala Asn Leu Glu Tyr Lys Thr Gly Ala
165 170 175

Phe Ser Met Pro Glu Val Asn Val Asp Tyr Asn Ala Ser Ser Glu Thr
180 185 190

Leu Arg Cys Glu Ala Pro Arg Trp Phe Pro Gln Pro Thr Val Val Trp
195 200 205

Ala Ser Gln Val Asp Gln Gly Ala Asn Phe Ser Glu Val Ser Asn Thr
210 215 220

Ser Phe Glu Leu Asn Ser Glu Asn Val Thr Met Lys Val Val Ser Val
225 230 235 240

Leu Tyr Asn Val Thr Ile Asn Asn Thr Tyr Ser Cys Met Ile Glu Asn
245 250 255

Asp Ile Ala Lys Ala Thr Gly Asp Ile Lys Val Thr Glu Ser Glu Ile
260 265 270

Lys Arg Arg Ser His Leu Gln Leu Leu Asn Ser Lys Ala Ser Leu Cys
275 280 285

Val Ser Ser Phe Phe Ala Ile Ser Trp Ala Leu Leu Pro Leu Ser Pro
290 295 300

Tyr Leu Met Leu Lys
305

<210> 393

<211> 282

<212> PRT

<213> Homo sapiens

<400> 393

Met Ala Ser Leu Gly Gln Ile Leu Phe Trp Ser Ile Ile Ser Ile Ile
5 10 15

Ile Ile Leu Ala Gly Ala Ile Ala Leu Ile Ile Gly Phe Gly Ile Ser
20 25 30

Gly Arg His Ser Ile Thr Val Thr Thr Val Ala Ser Ala Gly Asn Ile
35 40 45

Gly Glu Asp Gly Ile Leu Ser Cys Thr Phe Glu Pro Asp Ile Lys Leu
50 55 60

Ser Asp Ile Val Ile Gln Trp Leu Lys Glu Gly Val Leu Gly Leu Val

000780 "T0995950

```
<400> 394
Met Ala Ser Leu Gly Gln Ile Leu Phe Trp Ser Ile Ile Ser Ile Ile
  1                      5                      10                      15
Ile Ile Leu Ala
          20
```


20

<210> 409

<211> 20

<212> PRT

<213> Homo sapiens

<400> 409

Met Ile Glu Asn Asp Ile Ala Lys Ala Thr Gly Asp Ile Lys Val Thr

1

5

10

15

Glu Ser Glu Ile

20

<210> 410

<211> 20

<212> PRT

<213> Homo sapiens

<400> 410

Thr Glu Ser Glu Ile Lys Arg Arg Ser His Leu Gln Leu Leu Asn Ser

1

5

10

15

Lys Ala Ser Leu

20

<210> 411

<211> 20

<212> PRT

<213> Homo sapiens

<400> 411

Ser Lys Ala Ser Leu Cys Val Ser Ser Phe Phe Ala Ile Ser Trp Ala

1

5

10

15

Leu Leu Pro Leu

20

<210> 412

<211> 20

<212> PRT

<213> Homo sapiens

<400> 412

Ser Ser Phe Phe Ala Ile Ser Trp Ala Leu Leu Pro Leu Ser Pro Tyr

1

5

10

15

Leu Met Leu Lys

20

<210> 413

<211> 35

<212> PRT

<213> Homo sapiens

000T80-T080E060

Ile Ser Gly Arg His Ser Ile Thr Val Thr Thr Val Ala Ser Ala Gly
1 5 10 15
Asn Ile Gly Glu Asp Gly Ile Leu Ser Cys Thr Phe Glu Pro Asp Ile
20 25 30
Lys Leu Ser
35

<213> Homo sapiens

[illegible]

<213> Homo sapiens

[illegible]

<213> Homo sapiens

Lys Leu Ser Asp Ile Val Ile Gln Trp Leu
1 5 10

<213> Homo sapiens

Ser Leu Gly Gln Ile Leu Phe Trp Sér Ile
1 5 10

<213> Homo sapiens

Leu Leu Asn Ser Lys Ala Ser Leu Cys Val
1 5 10

<213> Homo sapiens

Ser Leu Cys Val Ser Ser Phe Phe Ala Ile
1 5 10

<213> Homo sapiens

Val Leu Tyr Asn Val Thr Ile Asn Asn Thr
1 5 10

<213> Homo sapiens

Ile Leu Phe Trp Ser Ile Ile Ser Ile Ile
1 5 10

<213> Homo sapiens

Leu Leu Pro Leu Ser Pro Tyr Leu Met Leu
1 5 10

$\langle 210 \rangle$ 423

<211> 9
<212> PRT
<213> Homo sapiens

<400> 440
Lys Val Val Ser Val Leu Tyr Asn Val
1 5

<210> 441
<211> 9
<212> PRT
<213> Homo sapiens

<400> 441
Ile Leu Ala Gly Ala Ile Ala Leu Ile
1 5

<210> 442
<211> 9
<212> PRT
<213> Homo sapiens

<400> 442
Trp Leu Lys Glu Gly Val Leu Gly Leu
1 5

<210> 443
<211> 9
<212> PRT
<213> Homo sapiens

<400> 443
Ile Ile Leu Ala Gly Ala Ile Ala Leu
1 5

<210> 444
<211> 9
<212> PRT
<213> Homo sapiens

<400> 444
Asn Val Thr Met Lys Val Val Ser Val
1 5

<210> 445
<211> 9
<212> PRT
<213> Homo sapiens

<400> 445
Glu Met Phe Arg Gly Arg Thr Ala Val

000T30" T000000000

